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DELEADERS' MANUAL

A HANDBOOK FOR SAFE LEAD PAINT REMOVAL

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Commonwealth of Massachusetts
Department of Public Health
Childhood Lead Poisoning Prevention Program
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COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC HEALTH

Michael S. Dukakis, Governor

John Mudd, Acting Secretary of Human Services

Bailus Walker, Jr., Commissioner of Public Health

INTRODUCTION

PURPOSE

This manual will serve as a guide to deleading contractors. It will explain relevant sections of the Massachusetts Lead Law and Regulations, and describe various and safe methods and materials which eliminate sources of lead paint in the home, thereby making a child's environment safer.

SOURCES

The principal sources of lead in the home that are of interest to deleading contractors include: paint, putty, leaded lacquers, antiqued woodwork, and horsehair plaster walls.

EFFECTS

The Massachusetts Division of Occupational Hygiene classifies lead as highly toxic and recommends rigorous precautions when lead dust or fumes are present. (Appendices I and II) Before deleading is started, read the safety section of this manual beginning on Page 5.

Deleaders and home occupants are most commonly poisoned by inhaling lead dust or fumes. The effects of lead on adults include such symptoms as anxiety, nervousness, tiredness, and "crabiness." You might also notice some flu-like symptoms or feel weak and "achy". Eventually, lead can affect the nerves which control the arms and legs. "Wrist drop", "lead colic", and "lead lines on the gums" can also occur. Do NOT wait for these symptoms to appear before consulting your doctor. Make sure venous blood leads are a part of your preventive routine. (Appendix III)

The effects of lead on children are different from its effects on adults. Children have higher metabolic rates, are generally more active, and therefore have higher respiratory volumes relative to body size. Airborne lead could provide an internal dose of 8 to 20 ug per day for a child. Paint, of course, provides lead in the highest concentration for children... One single paint flake containing one percent lead delivers an external dose of 10,000 ug. (Appendix IV)

Eventually, chronic lead exposure will affect the child's brain. It can cause behavior problems, reading problems, mental retardation, and even death in children depending on the amount and the duration of exposure. Improper deleading, resulting in further exposure to lead by children and other family members, has resulted in hospitalization in some cases. Once lead has affected a child's brain, the damage is permanent. Children under the age of twelve and pregnant women, since lead can harm the developing baby, must be protected from these hazards. Avoid having children or pregnant women present while you are working.

If you think a child has been exposed to lead, his doctor can take a blood sample for testing which will show whether or not there is any reason to be concerned.

BACKGROUND INFORMATION

The Massachusetts Lead Law (M.G.L. c. 111, ss. 190-199) was enacted in November 1971 to take effect in January 1973. It affects all Massachusetts residences. The applicable sections regarding deleading are as follows:

s. 194 This section provides for the lead detection component of the lead program and establishes priorities for residential inspections.

s. 197 The owner's responsibility to remove or cover offending lead paint and the surfaces to be corrected are identified here.

s. 198 This section stipulates that lead violations may be treated as a violation of the state sanitary code and that enforcement is to be carried out by local boards of health and the state program.

s. 199 The owner's liability for damages caused by the failure to remove lead paint are specified in this section.

The applicable detailed procedures include the following:

Regulation	Subject
	<u>Definitions</u>
460.025	dangerous level of lead
460.027	dwelling, residential premises,
460.029	intact surface
460.031	loose paint
	<u>Compliance</u>
460.110	method of compliance
460.120	methods of removal
460.130	methods of covering
460.750	reinspections
	<u>Safety</u>
460.140	cleaning of areas being corrected
460.150	use of respirators during paint
	<u>Legal Capacity</u>
460.620	emergency matter

INTERPRETATION OF THE INSPECTION REPORT

IDENTIFICATION OF EXTERIOR SIDES

A copy of an actual inspection form is included in Appendix VII. The inspection form consists of a minimum of four pages; 1. lay out, 2. kitchen and bath, 3. other living areas, 4. exterior.

The top sheet of the inspection report contains a floor plan of the dwelling unit to be deleaded. (460.720) Please note that this floor plan is not meant to be a blueprint nor a scale drawing of the apartment or house. Its purpose is to help you identify the rooms and the surfaces needing deleading. The "A" side of the building is the address side, that side of the house facing the street from which the building gets its address. As you stand facing the house, with your back to the street, side "A" is directly in front of you, side "B" is on your left, side "C" is the back of the building, and side "D" is on your right. (Diagram 1) Porches and closets are treated as separate rooms. For example, a front porch on the street side (address side) of a house would usually have railings on the "A" side, possibly also on the "B" and/or "D" sides, but the "A" siding on the house is the "C" siding on the porch area of the report. (Diagram 2)

IDENTIFICATION OF INTERIOR SIDES

Rooms are labeled or numbered (e.g. living room, dining room; or room 1, room 2). Each room on the inspection report also has an "A", "B", "C", and "D" side. With your back to the street, side "A" is behind you, side "B" is to your left, side "C" is directly in front of you, and side "D" is to your right. This applies to each individual room. To be certain nothing is missing when deleading, it is advisable to start work in the "A/D" corner of each room and continue in a clockwise direction until that corner is again reached. Then, check each surface against the inspection report to make certain that none have been missed. It is also advisable to check the undersides of windowsills and the outer sides of window sashes for loose paint.

IDENTIFICATION OF SPECIFIC SURFACES

Terms used by lead inspectors frequently are not the same terms used by the construction industry. For this reason, we have included the following diagrams to illustrate the surfaces referred to on the inspection report.

460.700	enforcement by local code enforcement agencies
460.720	procedures for inspection
460.750	reinspections
460.800	judicial proceedings

In the following pages, references are made to the statute (ss. 190-199) and to the regulations (105 CMR 460.000-460.990). Both of these are included for reference in Appendices V and VI.

It is the intent of this law to immediately alleviate lead hazards for the protection of the Commonwealth's children. Once an owner is notified that a violation exists, deleading and repainting must be accomplished within seven working days (460.620 and 460.700).

LEAD LAW AND REGULATIONS

METHODS OF TESTING PAINTED SURFACES

One method of testing for lead in paint is x-ray fluorescence (105 CMR 460.032). The x-ray fluorescence analyzer works well on flat surfaces, does not affect painted surfaces, and gives a digital reading of the amount of lead in paint in milligrams per square centimeter. Readings greater than 1.2 milligrams per square centimeter (mg/cm^2) constitute a dangerous level of lead (460.025).

Another means of lead detection is sodium sulfide (460.025). A six to eight percent solution must be used as required by regulation. If lead is present, the sodium sulfide, when applied to paint will change color from clear to gray or black indicating excessive amounts of lead in paint.

Both tests are equally valid under 460.730 and 460.025.

SURFACES REQUIRING DELEADING

Intact chewable surfaces, to a height of four feet from the floor and all loose, painted surfaces that have tested positive by the above methods, must be deleaded. This also applies to surfaces within common areas, exterior areas and includes all other structures within the same lot line (s. 197, 460.027 and 460.031).

Loose paint is defined as "peeling, flaking, or chipping paint; paint over crumbling, cracking or falling plaster or plaster with holes in it; paint that is damaged in any manner such that a child can get paint from the damaged area." (s. 197, 460.031)

Intact lead paint on chewable surfaces must be removed four feet up from the floor, steps, or ground, and four inches back from <u>each</u> chewable edge. (s. 197, 460.029)

An intact surface is defined as a surface with no loose paint. (460.029)

Chewable surfaces are defined as "windowsills; door frames below the four foot level; windows, including mullions, below the four-foot level; stair rail spindles; stair treads from the lip to the riser on bottom and four inches back from the lip on the top of the tread; doors below the four-foot level and four inches from all edges; stair rails; porch railings; and all other exterior and interior surfaces or fixtures that may be readily chewed by children (s. 197b) Pipe covers and "outside corners" are considered chewable surfaces and must be treated as such. All paint on these surfaces must be completely removed or permanently covered four feet up from the floor and four inches back from <u>each</u> edge. (460.110, 460.020, 460.130)

Please note that Federal and Massachusetts laws regarding lead paint differ. Removing only loose paint and repainting the surfaces with non-leaded paint does not constitute compliance with Massachusetts State Law.

DIAGRAM 1.

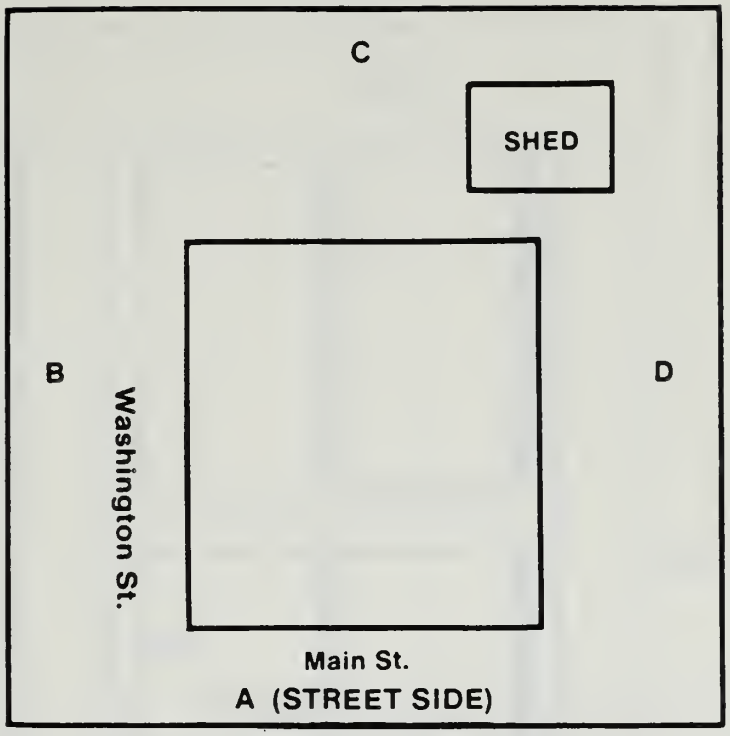
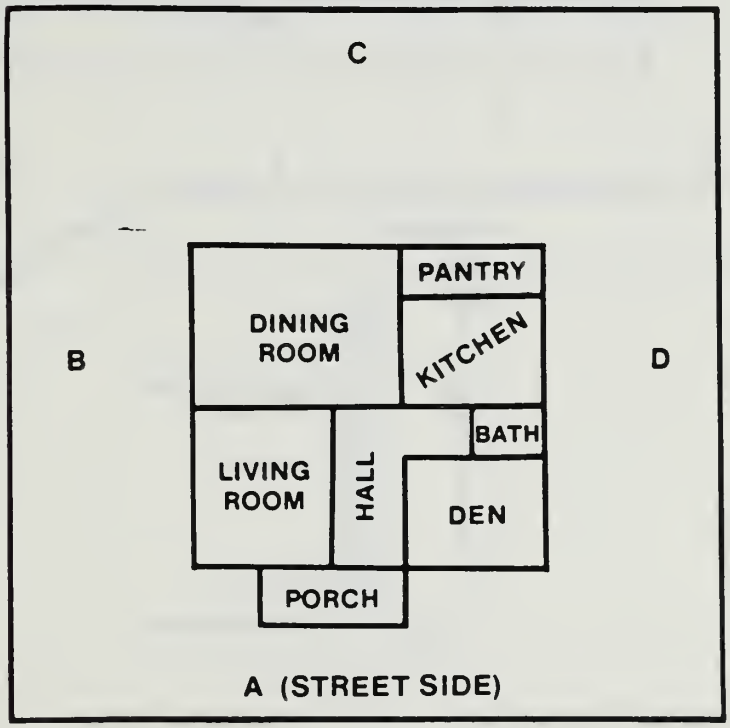


DIAGRAM 2.



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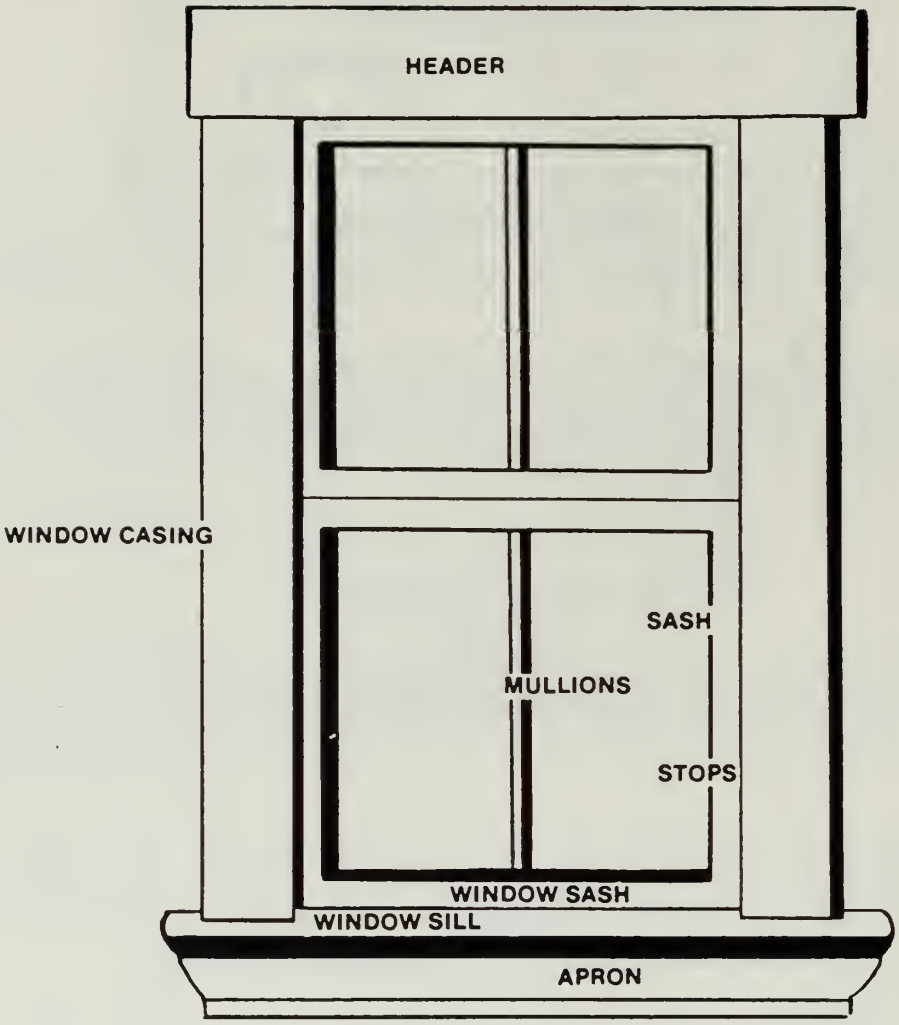
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SASH
MULLIONS
STOPS
WINDOW SASH
WINDOW SILL
APRON

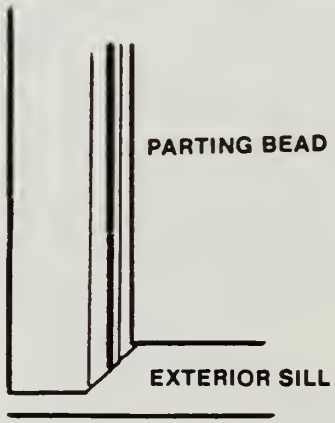

PARTING BEAD
EXTERIOR SILL

DIAGRAM 4

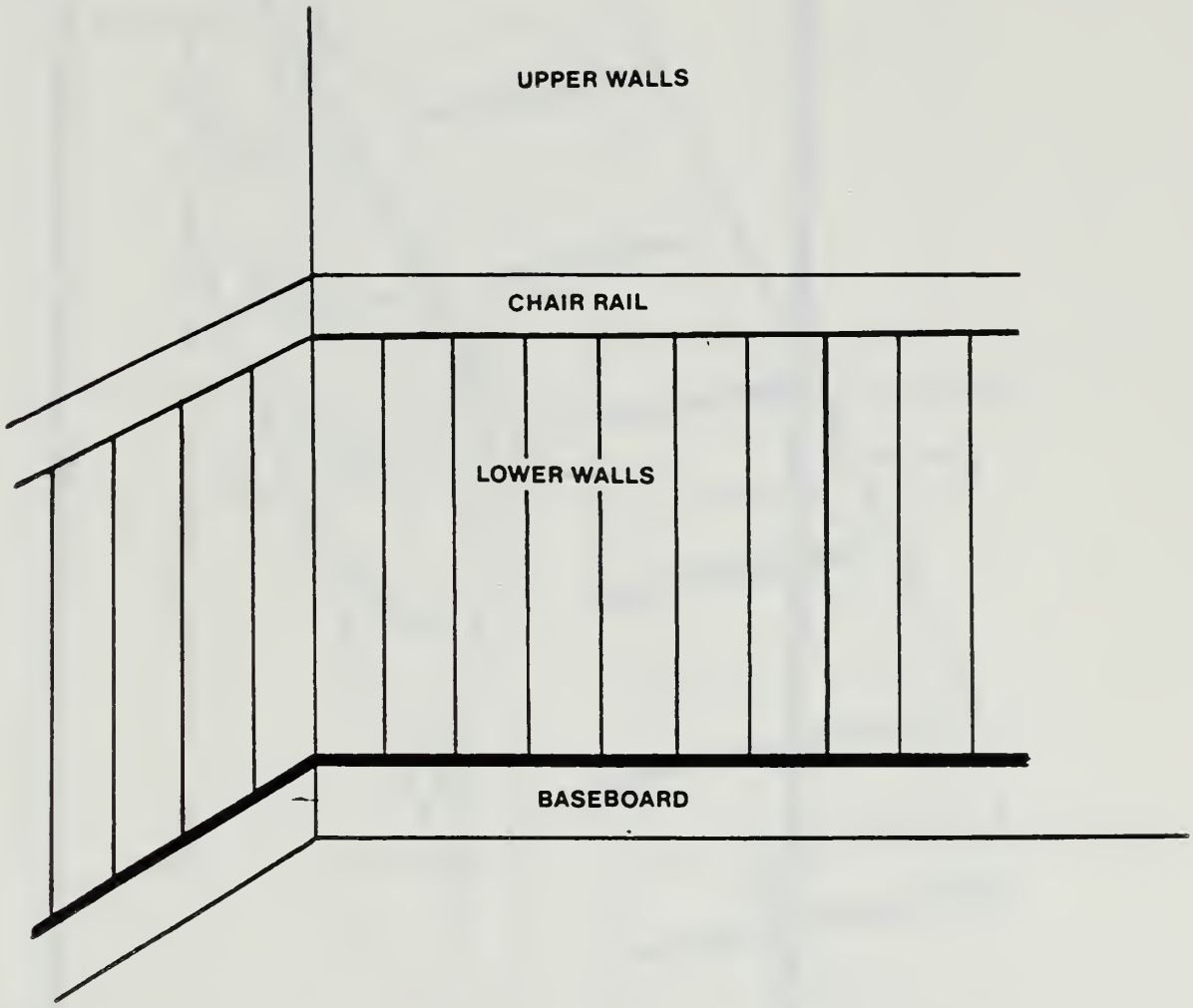


DIAGRAM 5

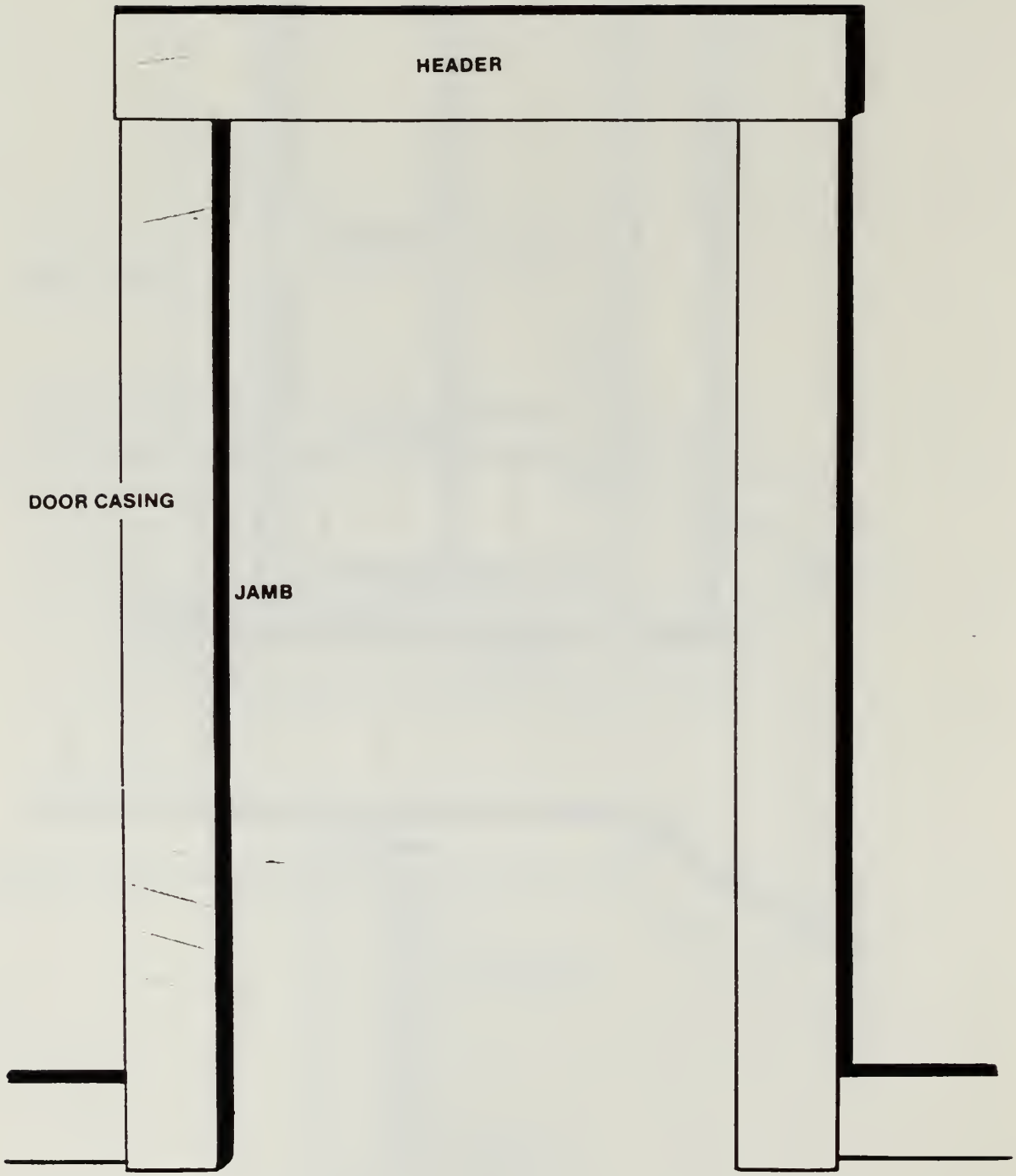


DIAGRAM 6

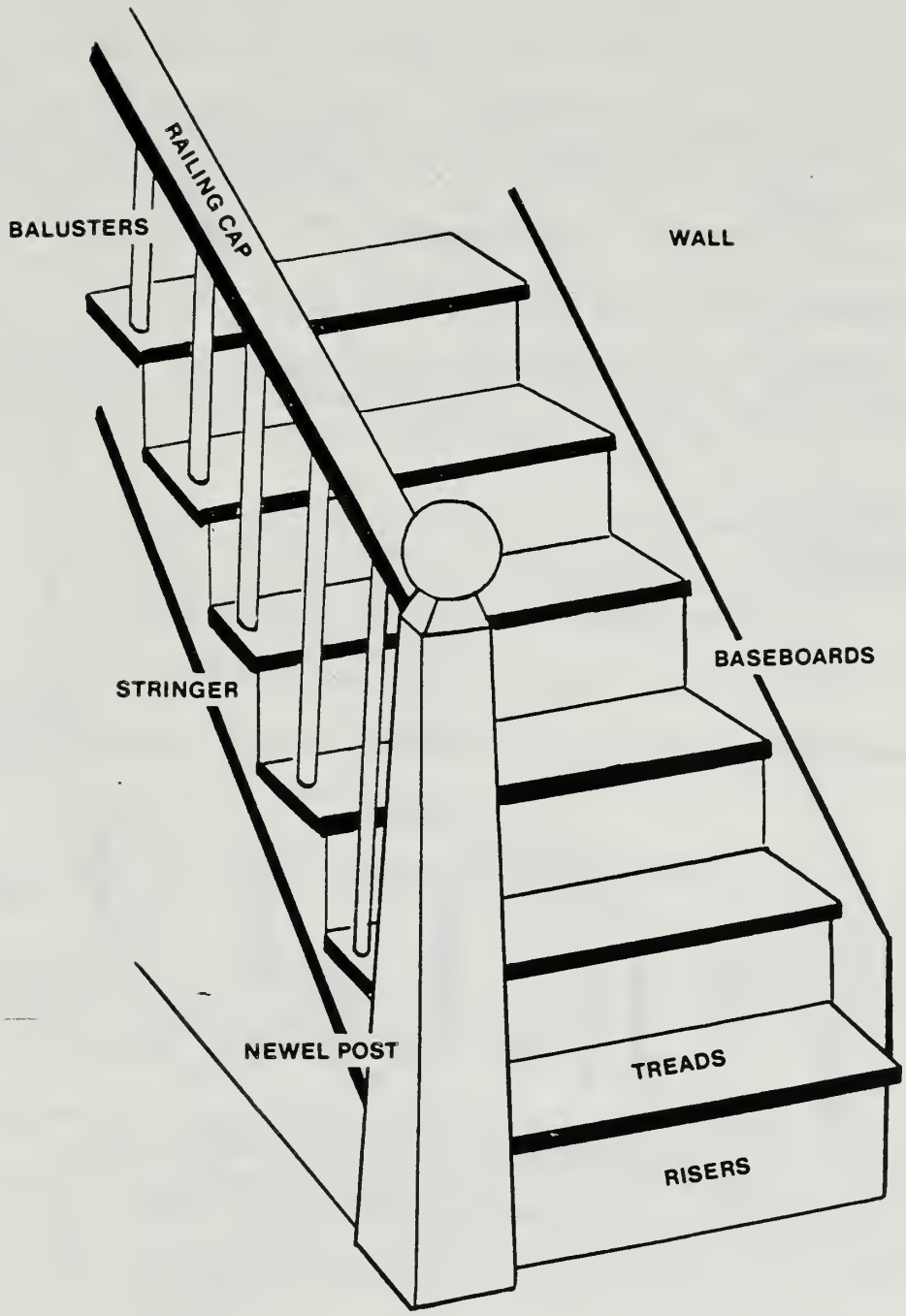
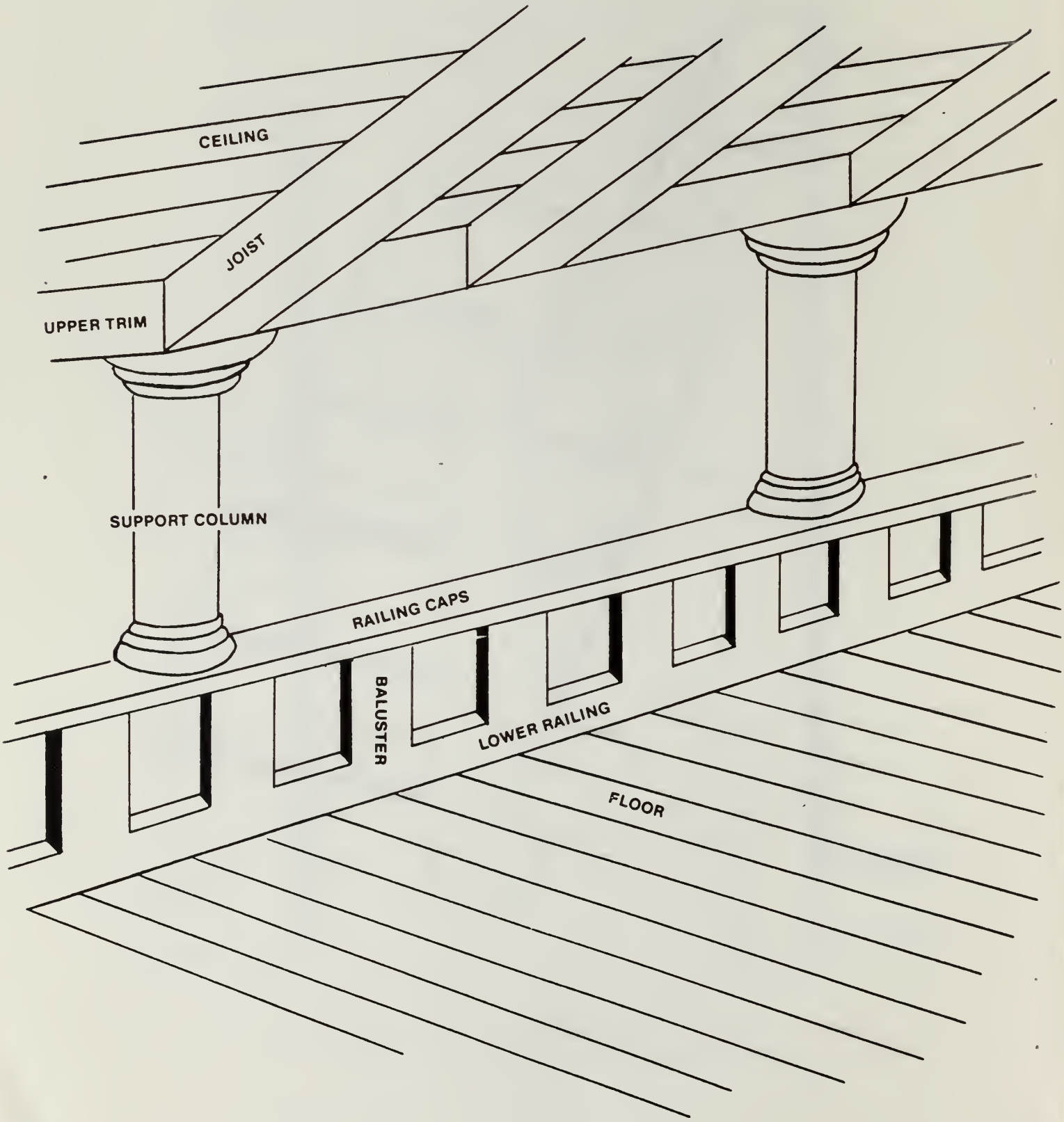

RAILING CAP
BALUSTERS
WALL
BASEBOARDS
STRINGER
NEWEL POST
TREADS
RISERS

DIAGRAM 7


CEILING
JOIST
UPPER TRIM
SUPPORT COLUMN
RAILING CAPS
BALUSTER
LOWER RAILING
FLOOR

SAFETY FACTORS INVOLVED IN DELEADING

Lead is a heavy metal, known to be toxic to humans. Eating lead paint, or breathing lead dust or fumes can cause lead poisoning in a child or an adult as previously explained.

To protect the health of all persons involved, it is of the utmost importance that deleading is quickly, safely, and correctly done.

Appendices I, II, III, and IV are for your reading and stress the importance of safety in deleading. Regulations 460.140 and 460.150 include legal requirements explained in the appendices.

GENERAL SAFETY

1. NO ONE is allowed in the work area without an approved respirator.

2. Each work area must be sealed from the remainder of the dwelling by taping plastic sheets or impervious drop cloths to all doorways within the work area. Work areas must remain sealed off until both work and clean-up are completed.

3. Cover all floors, carpets, furniture and appliances with clean impervious drop cloths within the work area. Use automotive masking tape (2 inches wide) to seal the drop cloths to other surfaces. Use this tape also to protect heat vents, ducts, and grates from lead particles.

4. Do not forget to include drop cloths in daily clean-up procedures.

5. Make certain all electrical connections are properly grounded.

WORKER SAFETY

If you work with lead, there are certain precautions you must take to protect your own health:

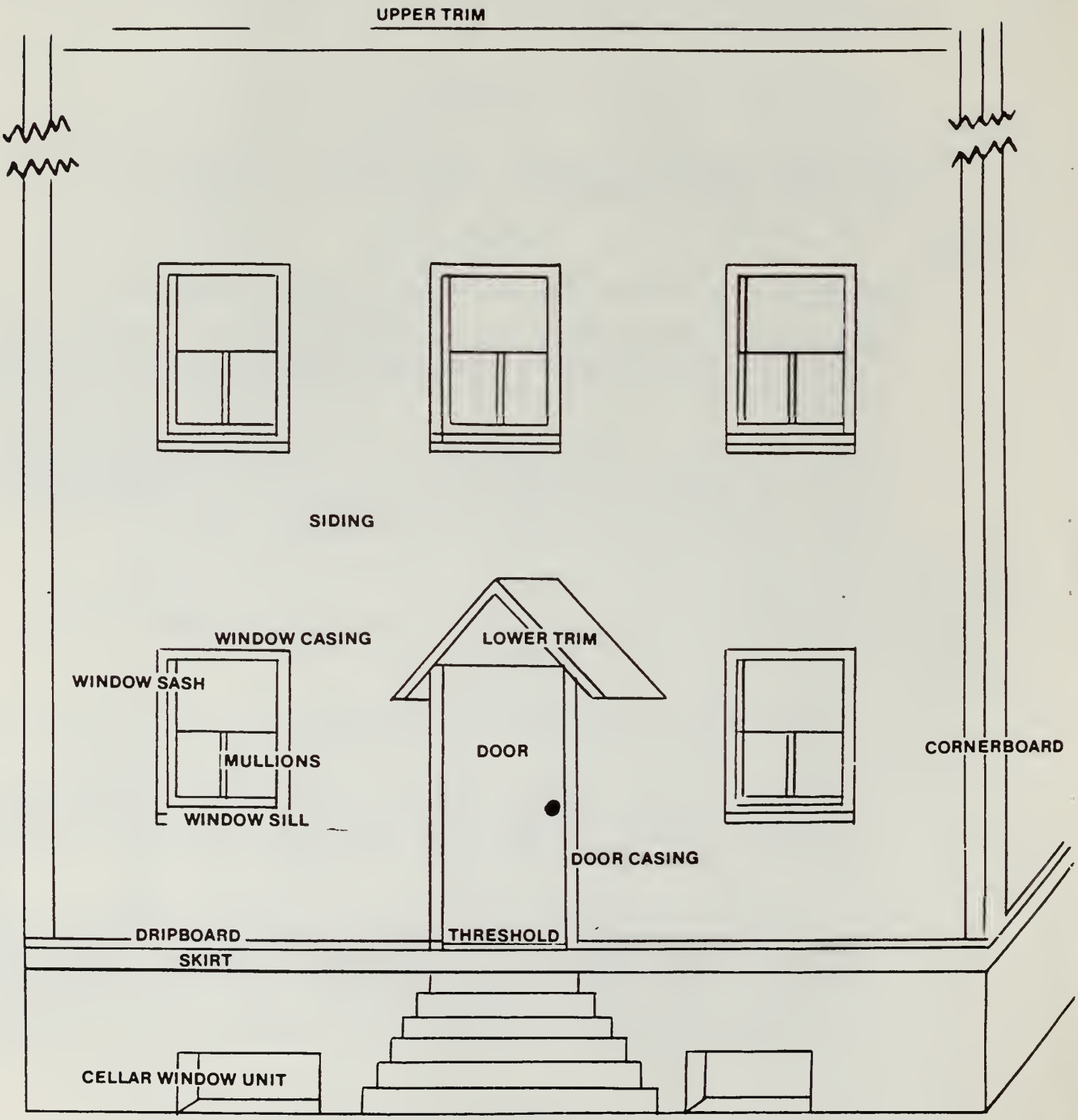
1. Make certain you are periodically tested for lead and monitored by an occupational medical specialist. A venous blood lead at medically appropriate intervals is usually all that is necessary if you use the correct deleading methods.

2. Wear coveralls, gloves, shoe covers, and a hat. Use this clothing for work only. Put them on immediately before entering the work area. Remove them immediately after leaving the work area and store them in a plastic bag. Make certain these items are washed separately from all other clothing (especially your children's clothes) and launder them at least every other day or use an industrial laundry service (see yellow pages "Uniform Supplies and Rentals").

3. Keep street clothes in a clean area, away from the work clothes.

4. Wash hands thoroughly before eating, drinking, or smoking. Do NOT eat, drink, or smoke in the work area. Remove work clothes before eating lunch and after cleaning up the work area.

DIAGRAM 8


UPPER TRIM
SIDING
WINDOW CASING
WINDOW SASH
MULLIONS
WINDOW SILL
LOWER TRIM
DOOR
DOOR CASING
CORNERBOARD
DRIPBOARD
THRESHOLD
SKIRT
CELLAR WINDOW UNIT

5. Shower and wash hair before coming into contact with any family members.

6. Do not allow anyone to enter the work area who is not wearing a respirator. Respirators must be worn during paint removal and clean-up. For your own safety, do not wear paper filter masks. Respirators should conform to NIOSH and MSHA standards No. TC23C-80 and/or TC21C-133, depending on the method of lead paint removal you are using.

7. Wash respirator face piece at the end of each day and store in a clean place. Follow manufacturer's directions for washing respirator filters and the frequency with which respirator filters should be changed. Make certain filters are replaced whenever breathing becomes difficult or whenever filters appear to be clogged with dust particles.

8. Check your respirator and make certain your supervisor also checks it periodically to be sure it fits properly and is used according to the manufacturer's directions.

9. Wear safety goggles to protect your eyes from fragments of paint.

10. Use a separate exhaust fan with a filter in each working area during both work time and clean-up time. A window fan with filter adequately accomplishes this.

11. Leaded paint must be removed in a manner which will result in as low a dust and/or fume level as possible.

OCCUPANTS

Adults

1. NO OCCUPANT is allowed to enter the work area during paint removal and initial clean-up.

2. Adult occupants, if not pregnant, may re-enter completed work areas after the deleader has left for the day and they must also wash down all surfaces of that day's work area with TSP (trisodium phosphate).

3. It is the occupant's responsibility to wash all clothes, dishes, bed-coverings, and all other porous personal items before using these items again.

4. As long as visible dust remains, occupants must wash all surfaces within the dwelling daily with TSP.

Pregnant women and children

1. ABSOLUTELY NO PREGNANT WOMEN OR CHILDREN UNDER TWELVE YEARS OF AGE MAY BE ALLOWED IN THE DWELLING UNIT WHILE DELEADING IS IN PROGRESS.

2. A final clean-up must be done by non-pregnant adult occupants after the deleader has finished his initial clean-up.

3. Pregnant women and/or children under twelve years of age are not to return to the dwelling unit until all visible lead dust is gone.

4. All toys and utensils used by the child prior to deleading must be thoroughly washed before they are again used.

Environment

Lead has a half-life of two thousand years in the soil. Contaminated soil is problematic and has been associated with chronic lead poisoning in some children.

To protect the environment we must:

1. Choose a method of deleading that produces the least amount of lead dust and/or fumes. Chips are much easier to deal with than dust.

2. Each day's clean-up must begin by thoroughly sweeping up all paint chips and dust.

3. Follow the sweeping by vacuuming all surfaces within the work area with an industrial vacuum cleaner. Please do not use the occupant's vacuum cleaner for this purpose.

4. After vacuuming, wash all surfaces within the work area with TSP at the end of each work day.

5. Impervious drop cloths and plastic sheets must be swept and damp mopped with TSP at the end of each workday. Vacuum cleaner bags must be emptied as they fill. Exhaust fan filters must be changed as they become clogged with dust particles.

6. When working on exterior areas, drop cloths must be taped to exterior siding or clapboards, and small trees and shrubs must be covered. All waste must be caught. Dust and paint chips must not remain on the ground.

7. Place all chips and dust into heavy trash bags and test for leachable lead. DEQE regulations 310 CMR s. 30.125 and 310 CMR s. 30.155 require all lead waste to be tested before disposal. These CMR's also describe the appropriate testing method and acceptable levels for sanitary landfill dumping. If leachable lead levels are too high, disposal must occur in a hazardous waste site. (Appendix VIII)

We must emphasize that lead in soil also adds to an individual's lead exposure, contaminates the soil and prevents its use for food gardening. Recent information indicates that lead in soil may leach into drinking water supplies.

RESPONSIBILITIES

OWNER

After proper notification, the owner is responsible for deleading the property as quickly and safely as possible. He/she is mandated by law to comply within seven days. His/her responsibility is to coordinate the deleading so that tenants and deleaders are aware of time, place, duration, and hazards of deleading. Work should be performed during regular working hours.

OCCUPANT

All occupants must remove their possessions so that they do not interfere with deleading. It is important for occupants to remove all their possessions from closets and place them on furniture in the center of the room. Tenants must remove all food, dishes, and utensils from the work area. These must be boxed, covered, and placed in a CLEAN area. All dishes and utensils must be washed prior to use. All knickknacks must be removed from the work areas. No occupant is allowed in the work area during deleading. All pregnant women and/or children under twelve years of age are not allowed in the dwelling unit during paint removal and until after FINAL clean-up. Adult occupants, if not pregnant, are also responsible for washing down all surfaces within the deleaded areas daily with trisodium phosphate (TSP) until no further dust is visible.

IT IS IMPERATIVE THAT OCCUPANTS UNDERSTAND AND FOLLOW THE ABOVE GUIDELINES FOR DELEADING TO OCCUR SAFELY AND SMOOTHLY. IT IS ALSO IMPORTANT THAT THEY UNDERSTAND DELEADERS NEED ACCESS TO THE DWELLING DURING NORMAL WORKING HOURS.

DELEADER

Deleaders must work in a professional manner so as not to endanger the health or safety of the occupants or themselves.

Deleaders are responsible for separating work areas from "clean" areas by taping plastic sheets over doorways to minimize risk from dust exposure. It is also the deleaders' responsibility to cover all the occupant's items in the work area. This includes, but is not limited to, carpets, floors, furniture, heat ducts and grates, and clothing.

Clean-up is critical to a proper deleading job. All surfaces, including drop cloths, within the work area must first be swept. Waste products must be placed in proper receptacles for disposal. After sweeping, vacuum remaining particles and then damp mop or sponge all surfaces within the work area. We also recommend that the deleader wash all surfaces with trisodium phosphate at the end of each day. INITIAL CLEAN-UP IS THE DELEADERS' RESPONSIBILITY.

Make certain NO OCCUPANTS ARE IN THE WORK AREA AT ANY TIME, and no pregnant women and/or children under twelve years of age are even in the dwelling. Pets should not remain in the dwelling as lead is toxic to them also.

The deleader must not use the occupant's blankets as drop cloths or tenant's vacuum cleaner or broom.

INSPECTOR

It is the inspector's responsibility to properly identify lead hazards, notify the owner, and be accessible to the deleader, owner, and tenant during the deleading process in order to answer questions and ensure safety. The inspector must also reinspect at the end of deleading to determine if paint removal was appropriate and complete.

REMOVING LEAD PAINT

When lead paint is removed, the surface it is removed from must be brought back to its natural state. There are several approved methods under the law and regulations (s. 197, and 460.120D). We will explain the various methods used; their advantages, and disadvantages, in order to help you decide which method would be most suitable for your particular circumstances.

In addition to the tools mentioned below, chisels, screwdrivers, hammers, levels, and tape measures are also almost always needed.

SCRAPING

The preferred method used by most deleaders is that of dry scraping. A hook scraper is used for the actual removal. A selection of blades from 3/4 inch to 2 1/2 inches in size are most common, and for curved or ornate surfaces, teardrop and diamond-shaped blades are most often used. Blades must be kept sharp for the most effective scraping. The most common method of sharpening is to use a medium mill file (bastard) or an electric bench grinder with a 60 grit wheel.

Dry scraping is fast, controls the dust, expedites cleaning, and is the most economical of the methods. Proper scraping methods, however, must be learned. Improper scraping can ruin and gouge woodwork and scraping cannot be adequately performed on most metal surfaces.
RECOMMENDED

POWER TOOLS

Power grinders, sanders, electric planes and wirebrushes are the tools we refer to in this section. Their chief advantage is that they are very quick and effective in removing lead paint. However, there are serious drawbacks to their use. Lead dust created by these methods is extremely difficult to collect and may remain a constant threat to the occupant and the environment. These methods also present a high health risk to the workers and occupants. Used by untrained personnel, these methods can totally ruin woodwork. They are never effective in small spaces, and subsequent restoration of the woodwork is almost impossible.
NOT RECOMMENDED

CHEMICAL PAINT REMOVERS

These are usually sold under various names and applied using a brush. After a period of time, they are removed with a putty knife or scraper. Their chief advantages are that they do not create dust and will not damage the woodwork. However, this method is slow (layer by layer), expensive, and requires extensive sanding to get down to the wood's natural state. Because of the toxic, carcinogenic, and, sometimes, flammable chemicals used, it is extremely important to keep the work area well ventilated and to make certain that respirators used are approved for toxic fumes.
NOT GENERALLY RECOMMENDED

ELECTRICAL HEATING ELEMENT

There is no known advantage to this method. It is very slow, can easily cause toxic fumes, and may permanently damage wood surfaces. Burn marks are extremely difficult, if not impossible to remove. Often the wood becomes scorched before the lead paint blisters. This method often "cooks" the lead into the wood if not properly done.
NOT RECOMMENDED

GRIT BLASTING

Sandblasting, grit blasting, black beauty, and other methods that use small particles under pressure to remove paint are referred to here. Although these methods are extremely fast, they are also extremely dangerous, and NOT RECOMMENDED for use on dwellings. They can destroy woodwork and permanently contaminate the soil and the environment. In addition, many cities and towns prohibit these methods being used on leaded surfaces. Others require permits before blasting is allowed. Contact the local Board of Health in the city or town where the property is located for specific rules.
NOT RECOMMENDED

COVERING

Covering is an acceptable method of eliminating lead hazards if done completely, permanently and with the correct materials (s. 197, and 460.130). The most common surfaces are exterior sills (also called wells) walls, stairs, and floors. Covering is safer than some other methods because it creates no dust. In certain circumstances, it may be less expensive than scraping on specific surfaces (e.g. ornate spindles). However, if during renovations, these coverings were removed, workers and occupants would again be exposed to lead hazards. Aesthetically, covering is not always suitable. Also, make certain to check fire and building code regulations before attempting to cover windows, doors, and walls of common areas.
RECOMMENDED

DIP TANK

Woodwork must be removed and delivered to a dip tank stripper for this method. Sodium hydroxide is usually used as the stripping agent. The actual dipping process should be followed by a neutralizing washdown with trisodium phosphate to prevent further peeling when refinished. Dipping removes all paint, and creates no dust. However, the dipping solution becomes saturated with lead if not cleaned and/or changed frequently and recontaminates other porous wood pieces. You might consider dipping only for certain spindles, ornate moldings, or doors of monetary or sentimental value. Not all items can be dipped; some unglue or fall apart. It is also extremely expensive and inconsistent in results.
NOT GENERALLY RECOMMENDED

REPLACING WOODWORK

Replacing woodwork involves hiring a carpenter. It is the most expensive but least hazardous method for removing lead from the environment. Other than cost, the only other consideration is that most wood stock today is not

dimensional. This means that all junctures of woodwork and walls must be patched to bring these surfaces back to their original integrity. If you choose this method, make certain woodwork is removed from property so that others do not burn it in wood stoves or fireplaces.
RECOMMENDED

REVERSING WOODWORK

This method is only included as a cost-saving method to be used in conjunction with other methods. It is mainly used on flat surfaces such as doors, windows, and wainscotting. Edges of some surfaces would still need to be scraped if accessible, and surfaces would still need sanding. Some skill is involved so that moldings are not broken when removed. This method is not suitable for ornate moldings.
NOT GENERALLY RECOMMENDED

DISPOSAL

After thoroughly cleaning the area as outlined under the safety section of this manual, materials may be placed in plastic bags and tested for proper disposal. Department of Environmental Quality Engineering regulations CMR s. 30.125 and s. 30.155 require that all lead waste be tested for leachable amounts. Depending upon test results, dispose of waste properly, in a sanitary landfill or hazardous waste site.

COMPLIANCE

Lead free and no lead violations do not mean the same thing. The first means that there is no lead on interior and exterior dwelling surfaces; the second means that the unit is in compliance with M.G.L. Ch. 111, s. 197, and 105 CMR 460.750. Compliance means all loose paint has been removed, and chewable surfaces below 4 feet have been deleaded, retested, and repainted or permanently covered.

To determine compliance, the inspector retests all surfaces cited in the original inspection report with either sodium sulfide or x-ray fluorescence (460.750). If these surfaces contain 1.2 mg/cm^2 or less, or if they test negative with sodium sulfide, then no dangerous levels of lead exist. Scraped surfaces now must be sanded, primed and repainted. (460.110 and 460.130)

After all the surfaces have been repainted, the inspector again reinspects to confirm that the new paint does not contain lead (460.750).

SUMMARY

Responsibility, safety and timeliness are the major factors involved in producing a "great deleading job". We need trained, professional lead paint removal experts as a part of our environmental team dedicated to eliminating lead poisoning in children.

We have a responsibility to ourselves, our families, and our environment. Your job is an extremely difficult one. You not only must make the present environment safe for a particular child, but you also must maintain the safety of this environment for children yet to come: YOUR JOB AND THE MANNER IN WHICH YOU ACCOMPLISH IT IS MOST IMPORTANT AND INVALUABLE TO THAT GOAL.

If you have any questions, comments, or would like more specific information, please contact your regional state lead inspector (Appendix IX), or local lead program, if one exists in your area (Appendix X).

GLOSSARY

Chewable surface: windowsills; door frames below the four foot level; windows, including mullions, below the four foot level; stair rail spindles; stair treads from the lip to the riser on the bottom and four inches back from the lip on the top of the treads; doors below the four foot level and four inches from all edges; stair rails; porch railings; and all other exterior and interior surfaces or fixtures that may be readily chewed by children (s. 197b)

Cleanup: sweeping, vacuuming and washing down of surfaces within the work area at the end of each day (460.140)

Common areas: halls and stairways between apartments and exteriors of buildings (460.720)

Compliance: all loose leaded paint has been removed or covered and no dangerous levels of lead remain on chewable surfaces within four feet of the floor and four inches of each chewable edge, and all scraped surfaces have been sanded, primed and repainted with non-leaded paint (s. 197, 460.110 -460.130)

Covering (of lead violations): 1. on ceilings, woodwork, walls: remove loose material, patch and cover completely with material impregnable to young children, such as gypsum board, fiberglass, canvas - backed vinyl wall covering, formica, or tile. 2. intact woodwork or any other surface readily chewed by children: remove woodwork or other surface and replace with new window sills, doors, or other surface finished with lead-free materials, or cover completely with aluminum, plywood, formica, or similar material; affix by nailing, cementing, gluing or by any other process adequate to prevent removal by a small child or by long-continued normal wear and tear (s. 197, 460.130) Contact paper and ordinary wall paper are not considered permanent coverings (460.130c)

Disposal: lead particles and dust removed from the dwelling must be placed in heavy duty plastic bags, tested and disposed of according to DEQE regulations 310 CMR ss. 30.125 and 30.155

Dwelling: every building or shelter used or intended for human habitation, including exterior surfaces and all common areas thereof, and every other structure located within the same lot line whose existence cause or is likely to affect noncompliance with the provisions of these regulations (460.027)

Dwelling Unit: one apartment within a dwelling

Inspection (lead): the appropriate use of acceptable test methods and standards (i.e. sodium sulfide and/or x-ray fluorescence) as specified in regulation 460.730 to determine whether interior and exterior dwelling surfaces contain a dangerous level of lead

Inspection Report: official form which clearly identifies by room, side and location the test results of paint tested within the dwelling and includes 1. diagrammatic floor plan, 2. kitchen and bath areas, 3. other living areas, 4. exterior and common areas (460.720)

Inspector: any inspector or other authorized employee or agent of a code enforcement agency or the State Program (460.028)

Intact surface: a surface with no loose paint (460.029). Nail holes or cracks of any types are considered loose paint.

Lead, dangerous level of: level of lead which materially endangers the health of children or adults, by producing a substantial and serious danger of lead poisoning. Present regulations define this as more than 1.2 mg/cm^2 when tested with x-ray fluorescence and/or a positive reading when tested with a 6-8% sodium sulfide (NA_2 S) solution (460.025)

Loose paint: peeling, flaking or chipping paint; paint over crumbling, cracking or falling plaster or plaster with holes in it; paint that is damaged in any manner such that a child can get paint from the damaged area (460.031)

Massachusetts Lead Law: an emergency law, necessary for the immediate preservation of the public health and safety, passed in 1971, amending Massachusetts General Law, Chapter 111 by adding sections 190 - 199

Natural state: the condition of the woodwork before it was ever covered by primers and paints; natural wood tests Pb negative

Pb: lead

Pb Negative: any surface that tests less than or equal to 1.2 mg/cm^2 using x-ray fluorescence, or negative (no color change) with a 6-8% sodium sulfide solution

Pb Positive: any surface that tests greater than 1.2 mg/cm^2 using the x-ray fluorescence analyzer, or tests positive (light gray to black color change) with a 6-8% sodium sulfide solution

Reinspections: using either sodium sulfide or x-ray fluorescence all surfaces within the dwelling are retested by the inspector to ascertain whether the old lead-based paint has been either completely removed or adequately covered (460.750)

Removal (of lead violation): 1. loose paint on ceilings, woodwork, walls, and any other surfaces; remove all lead-based paint down to loose material (plaster, wood, wallboard, etc.) sand wood, patch and seal plaster, and paint or cover with lead-free material. 2. intact paint on woodwork or other surfaces which may be readily chewed by small children: remove <u>all</u> lead-based paint below four feet from floor and four inches from edge, down to barewood or other base material; sand, prime and paint or cover with lead-free material. 3. loose lead-based putty: remove and replace with non-lead-based putty (460.120)

Respirators: a facial mask with filter cartridges designed to prevent ingestion of lead paint dusts and fumes by workers; respirators should conform to NIOSH and MSHA standards No. TC23C-80 and/or TC21C-133 depending upon the method used for paint removal (460.150)

Sodium Sulfide (6-8% solution): a chemical test used by the inspector to determine if dangerous amounts of lead are present in paint (460.025)

TSP: trisodium phosphate, a powder sold in paint and hardware stores, which is mixed with warm water and used to remove lead residue

ug: microgram; one millionth of a gram; 453 grams in a pound, 28,310,000 micrograms in one ounce.

Work area: the room or rooms where deleading is in progress (e.g. pantry, foyer, hall, room, porch) (460.140)

X-Ray Fluorescence Analyzer: a mobile machine which measures lead concentration in milligrams per square centimeter (mg/cm^2) by measuring activity of lead electrons; it is activated by a radioactive source within the machine (460.032)

APPENDIX I

The Commonwealth of Massachusetts

Executive Office of Economic Affairs

Department of Labor and Industries

Division of Occupational Hygiene

39 Boylston Street, Boston 02116

WILLIAM M. SHIPPS
Commissioner

STANDARD OPERATING PROCEDURE FOR REMOVING LEAD-BASED PAINT
READ BEFORE STARTING OPERATIONS

1. Put on coveralls, gloves, and shoe covers (or separate work shoes) and hat before entering the work area.

2. Cover floor, furniture, and equipment in the work area with plastic sheets.

3. Seal off work areas from "clean" areas by taping doors or using plastic sheets.

4. Make sure all electrical connections are properly grounded.

5. Turn on exaust ventilation in the work area. Each room being worked in should have a separate exaust fan.

6. Check to be sure that the exaust ventilation discharge out of doors and that the exaust air is filtered before it discharges outside.

7. Check respirator to be sure that it is clean and in good working condition.

8. Put respirator on and check to make sure it fits properly.

9. Check to make sure all workers in the area are wearing respirators before and work is started.

10. Remove paint in a manner that will result in as low a dust level as possible.

11. Do not smoke or carry cigarettes or food into the work area.

12. Wash hands before smoking or eating.

13. Do not eat in the work area.

14. Clean up area when work is completed.

15. Be sure that the plastic sheets are cleaned and the contents disposed of at least daily.

16. A vacuum cleaner should be used for cleanup while worker is protected by a respirator.

17. Remove coveralls and hat before leaving the area for lunch or at the end of the day. Change to clean street shoes or remove shoe coverings.

18. Wash respirator face piece at end of the day.

19. Replace respirator filters whenever breathing becomes difficult.

20. Store respirator in a clean, dust-free location.

21. Street clothes should be kept separate from the work clothes to prevent contamination.

22. Do not reoccupy completed work areas until walls and floor have been wet cleaned.

23. Dwelling occupants should not be permitted in work areas until after thorough cleanup or while work is in progress.

24. Individuals who perform this work regularly should be monitored by blood and/or urine analyses.

25. Do not use open flame or machine sanding.

The above procedures assume that the employees have been provided the proper respiratory protection and other equipment and that the employees have been properly instructed in the use of the equipment, especially the respiratory protection.

It is also assumed that the employees are aware of the hazards of lead and understand the reasons why the exaust ventilation and other precautionary measures are necessary. Recommended Safe Practice Bulletins "Lead" and on proper type of respirators are available for furtner information:

Department of Labor & Industries
Division of Occupational Hygiene
39 Boylston Street
Boston, MA 02116
617/727-3982

NO. 1218 Supersedes No. 1100 April, 1978

RECOMMENDED SAFE PRACTICES CHEMICAL DATA SHEET NO. 14

LEAD

HAZARD CLASSIFICATION HIGHLY TOXIC. USE RIGOROUS PRECAUTION WHEN DUST OR FUMES ARE PRESENT.

GENERAL Lead is one of the most extensively used of the heavy metals. Metallic lead is a major component of solder, type metal, battery plates, plumbing fixtures, and linings for chemical tanks. It is a common constituent of bronzes and is occasionally added to certain steels. Compounds of lead are widely used in the manufacture of storage batteries, ceramics, glass, anti-knock agents in gasoline, plastics and paint.

HARMFUL EFFECTS Occupational lead poisoning occurs chiefly from inhalation of the dust or fume of lead or its compounds. Gastro-intestinal absorption after swallowing white lead (lead carbonate) is the cause of most lead poisoning in children and may also affect workers handling the compound. Lead tetraethyl is the only compound which is absorbed rapidly through the skin. Touching cigarettes with lead-soiled hands may lead to breathing lead fume.

The most frequent early symptoms of lead poisoning are anxiety, nervousness, irritability, and abnormal tiredness. A variety of aches, pains, and muscle weaknesses are common. Muscle paralysis such as "wrist drop," severe abdominal cramps or "lead colic," and discoloration of the teeth or "lead line" are characteristic of only the most severe cases. Anemia is frequently found if a blood test is performed. Any or all of these effects may occur after a few weeks of relatively heavy lead absorption, and they may last for many months after the exposure ceases.

Possible late effects of lead exposure include kidney disease and high blood pressure. It is not known how much exposure is needed to produce these severe delayed effects. Heavy alcohol intake in workers who handle lead will hasten the development of acute symptoms of lead poisoning.

ENVIRONMENTAL CONCENTRATIONS Maximum allowable concentrations for lead compounds in air are shown in the following table.

Substance	Maximum Allowable Concentration (Milligram per Cubic Meter)
Inorganic lead dust and fume	0.05
Organic lead compounds, such as tetraethyl lead	0.05

Actions to be taken at different environmental concentrations of inorganic lead dust and fume are as follows:

Lead Concentration (Milligram per Cubic Meter)	Action
0.00 - 0.03	None
0.03 - 0.05	Consider changes in environmental controls - institute biological monitoring program
Greater than 0.05	Institute environmental controls and changes in work practices. Provide appropriate NIOSH-approved respirators. Continue biological monitoring.

PROTECTIVE MEASURES Processes which tend to produce harmful concentrations of lead dust or fume in the air include shoveling, weighing, mixing and other handling of lead compounds in powder form; sanding and grinding of lead, lead alloys or lead-painted surfaces; melting and pouring of lead-bearing bronze or steel; welding or oxy-gas cutting of lead-painted metal; lead smelting; lead burning, scraping or abrasive blasting; lead or lead paint spraying; drossing of lead kettles; annealing. If possible, all these processes should be enclosed or partially enclosed and exhaust ventilated. The exhausted air should not be recirculated back into the workroom under any circumstances. Adequate precautions should be implemented to insure that the outside environment is protected. If control of the dust or fume in certain cases is impractical by using an enclosure or local exhaust, the exposed workers should be protected by NIOSH-approved airline hoods or respirators or by approved lead dust or fume respirators. Good plant housekeeping is essential where lead dust is present. The machines, benches, and floors should be cleaned on a regular basis and preferably by the use of an industrial vacuum cleaner or else by wet sweeping. Good personal hygiene should be practiced by workers handling lead. Eating, drinking and smoking should be prohibited in work areas. Hand washing facilities must be available to prevent hand contamination of food and cigarettes.

MEDICAL CONTROL Pre-employment examinations are recommended for employees who will be exposed to lead. Most important are pre-employment blood lead and zinc protoporphyrin determinations and history of past lead employment. Workers must be informed in advance of the dangers of lead exposure and warned about the symptoms noted above. Any worker who develops any of the above symptoms while working with lead should be examined by a physician and have blood lead and zinc protoporphyrin levels measured. Workers with elevated lead levels and clinical symptoms must be removed from the exposure. Treatment with chelating agents, such as EDTA and penicillamine, is rarely necessary and is never a substitute for complete removal from lead exposure.

The following interpretations of blood lead measurements are made:

Blood-Lead Concentration (Micrograms per 100 ml)	Action
0.0 to 40	Repeat in six months if lead exposure continues
Above 40	Repeat in 8 weeks
Above 80	Remove worker from job.

The OSHA Lead Standard provides for a phased-in removal schedule. According to the following time-table, removal of an individual from lead exposure is required after March 1, 1980 when the blood level exceeds 70 micrograms per 100 ml; after March 1, 1981, removal is required when the blood lead is above 60; after March 1, 1983 the removal level is 50 micrograms per 100 mL.

Urine-lead determinations are alternate means for assessing lead exposure but are less meaningful than blood-lead measurements. Urine lead tests, furthermore, cannot be used to meet OSHA Medical requirements. Nevertheless, the following interpretations are utilized:

Urine-Lead Concentration (Milligram per liter)	Action
0.00 - 0.08	Repeat in six months (if lead exposure continues)
Above 0.08	Repeat in two weeks. If urine-lead remains above 0.08, perform blood-lead analysis.

The urine values reported are adjusted to a specific gravity of 1.024. The results of abnormally dilute samples are less reliable than those of normal concentration. Values out of line with those of other workers with similar jobs should be checked again.

The Commonwealth of Massachusetts
Department of Public Health
Childhood Lead Poisoning Prevention Program
305 South Street, Jamaica Plain, Mass. 02130
(617) 522-3700

MEDICAL SURVEILLANCE PROGRAM FOR DELEADERS

Deleaders are potentially exposed to levels of lead which can affect their health. Exposure is largely preventable through training, supervision, close adherence to the safety practices and regular health monitoring. Deleaders working for the Commonwealth and/or certified by the Commonwealth will be required to fulfill the medical surveillance protocol listed in Table 1.

Early symptoms of lead poisoning are often vague and similar to symptoms of common illnesses. You might, for example, feel lightheaded or nauseated or have a persistent thirst. However, regular check-ups are the only accurate way of determining if you have been exposed to dangerous levels of lead.

The systems of the human body most sensitive to the presence of lead include the nervous system and the hematopoietic system which manufactures red blood cells. The effects of low levels of lead on these systems are reversible if further exposure is reduced or stopped. Changes in the hematopoietic system can be discovered by simple blood tests. Anemia is usually the first of these changes. The blood tests will include hematocrit, hemaglobin and erythrocyte protoporphyrin levels as well as an actual lead level test. All blood tests must be drawn from the vein. Due to the problem of contamination, capillary or finger-stick samples will not be accepted.

Changes in the hematopoietic system usually preclude those of the nervous system. Blood lead levels of 50 mcg/dl or greater, erythrocyte proroporphyrin levels of 70 mcg/dl or greater, or a lower than normal hematocrit or hemoglobin indicate that you need to be referred to a specialist in occupational medicine for a physical examination and evaluation of signs of neurotoxicity before returning to work. Safety practices must also be evaluated and re-training initiated when appropriate.

Other health effects, particularly kidney damage, have been associated with exposure to high levels of lead for long periods of time. However, deleaders working with relatively low levels of lead and following the safety precautions should not develop this or any other long term health effects.

Recent studies suggest that women deleaders may face special health risks. A pregnant woman must be advised by the contractor of the risks which lead presents to the developing fetus. She must discuss this with her obstetrician and the occupational medical specialist before continuing to work.

ZINC PROTOPORPHYRIN Zinc protoporphyrin (ZPP) or free erythrocyte protoporphyrin (FPP) are products of the body's heme synthesis. Lead exposure affects this system and causes an accumulation of this metabolic product in the blood and is indicative of body dysfunction. A correlation between elevated ZPP or FPP and blood lead has been studied, but the relationship is not too well defined. It is well established, however, that a high blood lead is usually accompanied by a corresponding elevation in ZPP or FPP. Elevated ZPP or FPP may persist for several weeks after lead exposures have ceased and blood-lead levels are reduced. No medical removal level for ZPP or FPP has been determined at this time.

MASSACHUSETTS DEPARTMENT OF LABOR AND INDUSTRIES
William M. Shipps, COMMISSIONER

DIVISION OF OCCUPATIONAL HYGIENE
Harold Bavley, P.E., DIRECTOR

39 Boylston Street, Boston 02116

Telephone 617/727-3982

No. 1278 Supersedes No. 1210 January, 1980

TABLE

Month	0	1	2	3	4	5	6	7	8	9	10	11	12
History and Physical Exam	x						x						x
Blood Lead Level	x	x	x	x			x			x			x
Erythrocyte Protoporphyrin Level	x	x	x	x			x			x			x
Hematocrit Hemoglobin	x			x			x			x			x

OCCUPATIONAL MEDICINE SPECIALISTS

Source: Folio's Medical Directory of Massachusetts, Sixth Ed., Published by Folio Associates, Inc. Boston, MA. 02116, 1982.

Acton (617)

Bell, Edgar D. MD ('50,MA-01) ..... G 277-3703
Berke, Jerry H. MD ('71,IL-11) ..... P 263-3125

Agawam (617)

Wein, Ebar A. MD ('43,IL-42) ..... P 786-2410

Amherst (413)

Kendrew, Leroy J. MD ('44,NY-20) ..... H 545-2668

Andover (617)

Acton, Edward J. MD ('47,MA-07) ..... B 475-7407
Dickson, Harry E. MD * ('51,TN-06) .....
Miller, Joseph M. MD * ('45,MA-01) S ..... P 475-0195
Pash, James J. MD ('37,MA-15) .....

Arlington (617)

Hesler, Norman B. MD ('44,IN-20) ..... P 648-4255
Swartz, Morton DO ('53,MA-77) ..... P 643-6380

Ashland (617)

Kohn, Kurt H. MD ('37,UNKN) IF .....

Athol (617)

Lerner, Herman MD ('63,IL-42) .....

Attleboro (617)

Alter, Sheldon MD ('64,MA-07) ..... H 222-5200
Lawrence, Bradford W. MD ('43,MA-07) ..... P 222-1047

Auburn (617)

Roche, Richard J. MD ('47,MA-07) .....

Bedford (617)

Arbeene, George N. MD ('42,MA-07) ..... A 274-7100
Jepp, John E. MD ('54,MA-07) ..... P 275-7513
Spencer, George E. MD ('43,PA-12) ..... P 275-7544

Beverly (617)

MacLeod, Allan R. MD ('63,MA-05) S .....

Boston (617)

Baker, Edward L. MD * ('72,TX-04) 732-1260
Bowen, Edward H., Jr. MD ('49,MA-01) ..... B 421-6669
Donaldson, Joseph V. MD * ('44,PA-12) .....
Doreiswami, Subbiah MD ('52,INDI) ..... C 421-5057
Ferris, Benjamin G. MD * ('43,MA-01) ..... S 732-1244
Finn, Ronald E. MD * ('52,MA-07) ..... B 743-2638
Greer, William E.R. MD * ('43,MA-05) ..... H 267-3636
Jordan, Ruth Ann MD ('57,NY-01) ..... C 742-2638
Kefferstan, Frank J. MD ('44,NY-01) ..... P 227-3731
B 421-6270
Kost, Harold S. MD ('56,TX-02) ..... B 421-6000
Lerner, Herman MD ('63,IL-42) .....
Levin, Orrin MD ('35,MA-07) ..... G 267-1500
Maloof, Clarence C. MD ('45,MA-07) .....
Mancel, Barry M. MD ('58,MA-05) ..... M 742-3300
Miller, Joseph M. MD * ('45,MA-01) S ..... G 262-1500
Munter, Preston K. MD ('49,NY-01) .....
Murphy, Paul J. MD ('60,MA-01) ..... H 522-8110
Papaioanou, Xenophon L. MD ('58,MA-07) . B 236-3020
Peters, John M. MD * ('60,UT-01) ..... P 732-1260
Ramos, Marcos U. MD ('69,PR-01) S ..... H 247-5453
Ravin, Ivor S. MD ('40,MA-05) G ..... B 424-2371
Roberts, James I. MD * ('32,MA-07) ..... P 536-2941
Roche, Richard J. MD ('47,MA-07) ..... P 743-2636
Ryan, James MD ('73,MA-05) ..... B 223-1283
Schenker, Marc B. MD ('73,CA-02) ..... H 732-2276
Sitterson, Beecher W. MD ('43,MA-01) ..... B 266-3700
Sparks, Patricia J. MD ('75,UT-01) .....
Speizer, Frank E. MD ('60,CA-11) ..... S 732-2276
Spencer, George E. MD ('43,PA-12) ..... B 743-2636
Taylor, Julius W. MD ('46,KY-02) 1353-3575
Thomas, H. Emerson, Jr. MD ('62,MA-05) ... G 262-1500
Wang, Jung-Der MD ('75,TAIW) C ..... R 732-1214
Wegman, David H. MD * ('66,MA-01) ..... S 732-1000
Whittenberger, James L. MD ('38,IL-02) .... P 732-1272
Wilkins, George F. MD ('32,MA-01) ..... G 726-3427
Wills, Arthur A., III MD ('60,MA-05) ..... G 426-1426
Worth, Dorothy J. MD ('58,MO-34) ..... H 956-5000
Zambella, Joseph MD ('37,MO-44) I ..... F 223-1283

Braintree (617)

Christiani, David C. MD * ('76,MA-07) 843-0690
Wacks, Joseph S. MD ('32,MA-15) R ..... P 843-0674

Brighton (617)

Romer, Frank A. MD ('51,MA-07) ..... P 782-9595

Brookline (617)

Christian, Lawrence J. DO ('39,MO-79) 566-2241
Jordan, Ruth Ann MD ('57,NY-01) .....
Lewis, Elihu I. MD ('31,MA-05) ..... P 734-1800
Schenker, Marc B. MD ('73,CA-02) ..... P 232-3483
Zimon, Richard P. MD ('62,MA-01) ..... G 566-6400
Zoll, Daniel R. MD ('54,MA-07) FO ..... P 232-8543
C 232-9020

Burlington (617)

Leonardson, Borje O. MD ('44,MA-07) O .... G 273-5100

Cambridge (617)

Briefer, Caesar M., Jr. MD * ('58,IL-02) F ..... B 354-9428
Chalfen, Melvin H. MD ('54,MA-07) ..... H 498-1349
Ferris, Benjamin G. MD * ('43,MA-01) ..... G 495-2061
Goldman, Rose Hannah MD ('76,CT-01) .... H 498-1024
Kantrowitz, Warren MD ('60,MA-05) 1577-4846
Killelea, Joseph H. MD ('44,MA-07) ..... P 354-0234
Munter, Preston K. MD ('49,NY-01) ..... O 354-5673

Canton (617)

Rubin, Julius MD ('34,MA-15) ..... P 828-0661

Charlestown (617)

Leet, Robert K. MD ('63,NY-03) ..... G 242-5714

Chatham (617)

Shipp, Luther M. MD ('39,MA-07) ..... O 945-3478

Chestnut Hill (617)

Kaplan, Joseph H. MD ('26,MA-07) .....

Cohasset (617)

Cline, Albert H. MD ('52,MA-07) ..... P 383-9021

Concord (617)

Hardy, Harriet L. MD * ('32,NY-20) ..... P 369-7863
Houck, LeRoy P. MD * ('51,MI-01) G ..... P 369-9014
H 369-1400

Danvers (617)

Greenslet, Roger F. MD ('50,VT-02) F .....

Dorchester (617)

Aiela, Joseph, Jr. MD ('36,MA-05) 1436-4500
Christiani, David C. MD * ('76,MA-07) ..... P 282-5502

Douglas (617)

Spooner, Raymond H. MD ('35,VT-02) ..... H 476-3321

Duxbury (617)

Peters, James I. MD * ('53,MA-01) ..... P 934-6111
P 934-6111

East Boston (617)

Ferrino, Peter J. MD ('38,MO-44) SI ..... P 567-2755

Fall River (617)

Devillers, Paul R. MD ('49,PA-02) ..... P 678-0203
Vaillancourt, Henry R. MD ('xx,VT-02) ..... C 676-3411

Fitchburg (617)

Cerier, William I. MD ('54,NY-09) S ..... P 343-6441

Framingham (617)

Bonzey, Charles M., Jr. MD ('44,MA-05) O ... B 877-1120
Denton, Jane E. MD ('45,NY-01) O .....

Gloucester (617)

Menn, Neil N. MD ('63,VT-02) ..... G 281-1500

Greenfield (413)

Doane, Woolson W. MD ('65,VT-02) ..... H 772-6040
B 772-6040

Haverhill (617)

Papaioanou, Xenophon L. MD ('58,MA-07) .

Holden (617)

Benedict, Karl T., Jr. MD ('36,MA-07) ..... P 829-4047

Holliston (617)

Bowen, Edward H., Jr. MD ('49,MA-01) ..... P 429-4442

Hull (617)

Hall, John Eldridge MD ('55,CO-02) ..... G 925-4550

Jamaica Plain (617)

Murphy, Raymond L.H. MD ('61,NY-19) O ... G 522-5800
Peters, John M. MD * ('60,UT-01) 1524-2587
Sparks, Patricia J. MD ('75,UT-01) 1524-0864

Lawrence (617)

Bain, William J. MD ('34,MA-07) O .....
Levin, Murray N. MD ('43,VT-02) ..... B 685-2900
Pash, James J. MD ('37,MA-15) ..... P 686-5821
Silva, Jose L. MD ('47,DC-01) ..... H 783-4000

Leominster (617)

Cerier, William I. MD ('54,NY-09) S ..... H 537-4811
Glick, Harry S. MD ('34,MA-07) ..... D 537-7683
P 537-1313
Stevens, James C. MD ('60,VT-02) G ..... P 534-0694
H 537-4811

Lexington (617)

Alphas, Stephen J. MD ('55,MA-05) K ..... P 862-6600
Birchard, William H. MD * ('49,MA-01) ..... P 862-7349

Lowell (617)

Norris, Ronald V. MD ('66,IA-03) ..... G 458-2100
Taylor, Julius W. MD ('48,KY-02) ..... H 454-0411

Lynn (617)

Asterjian, Nubar K. MD ('54,IRAQ) A ..... B 594-2210
Dickson, Harry E. MD * ('51,TN-06) ..... P 594-0100
King, Joseph A. MD ('47,NY-09) ..... B 594-2210
Pierce, James F. MD ('48,DC-02) F ..... P 593-7900

Lynnfield (617)

Maloof, Clarence C. MD ('45,MA-07) ..... F 334-3230
Sanford, Wallace MD ('26,MA-75) ..... P 334-3530

Manchester (617)

Greenslet, Roger F. MD ('50,VT-02) F ..... C 526-118
MacLeod, Allan R. MD ('63,MA-05) S ..... C 526-148

Marlborough (617)

Hill, Arnold J. MD ('71,NS-01) ..... P 485-010

Maynard (617)

Porter, Richard MD ('51,MA-07) F ..... B 493-903

Medford (617)

Whalen, Edmund L. MD * ('38,MA-07) F .... B 396-532

Melrose (617)

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APPENDIX IV
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Appendix A

EXPOSURE TO LEAD: SOURCES AND EFFECTS

by Herbert L. Needleman, M.D.

Reducing exposure to lead and its consequences to health continues to be an important unfinished task in the public-health area. Recent recognition of lead in some glassware decorations has focused attention on the many sources of lead in the human environment and raises for re-examination the definition of critical thresholds for measurable health effects.

The early work of Massachusetts physicians such as Drs. McKann, Blackfan, Aub, and Byers led to an enriched understanding of the serious consequences of childhood lead poisoning. More recent data indicate that the sources of lead for children are multiple, and that body lead burdens below those associated with clinical symptoms can affect biochemical functions, and neuropsychologic performance.

The increased vulnerability of young children to lead is a well accepted clinical maxim. Increased absorption of lead across the child's gut has been demonstrated by Alexander et al.[1] and is supported by studies in the immature rodent by Kostial et al.[2] At the same internal dose of lead (as measured by blood lead concentration), children have recently been shown to have more impairment in heme synthesis than adults, as measured by free erythrocyte protoporphyrin.[3]

Because anemia is a long recognized effect of lead exposure, and blood is a tissue readily available for study, initial studies of the biochemical changes associated with lead have centered on the heme pathway. Additional studies have demonstrated that lead affects other heme enzymes, notably cytochrome P-450 in the liver.[4] Red-cell D-amino levulinic acid dehydrase (D ALA-D), an enzyme necessary for the conjugation of levulinic acid into porphobilinogen, is inhibited at lead levels as low as 10 μg per deciliter.[5] Millar et al. have shown that brain levels of D ALA-D in the rodent parallel peripheral blood levels, suggesting that oxidative metabolism in the brain may be affected at blood levels as low as 20 μg per deciliter.[6]

Lead inhibits brain adenyl cyclase at low concentrations in cerebellar preparations[7] and in nigrostriatal preparations.[8] Lead has also been shown to inhibit pancreatic adenyl cyclase.

Interference with globin synthesis[9] and collagen synthesis[10] has also been demonstrated at relatively low concentrations of lead. In the heme pathway itself, lead acts at a number of sites. In addition to the previously-cited inhibition of red-cell D ALA-D, lead acts on the red-cell mitochondrion. Here, it interferes with the incorporation of iron into the tetrapyrrole ring, resulting in its replacement by zinc. Consequently, increased levels of zinc protoporphyrin or its extraction product, free erythrocyte protoporphyrin, occur in persons with elevated blood lead levels. Recent studies indicate that this effect begins at 15 μg per deciliter.[11] Increased urinary amino levulinic acid excretion begins to appear at blood lead levels of 40 μg per deciliter.[12]

For the young child, the most important target organ is the brain. The catastrophic effects of lead encephalopathy and the protean symptoms of lead poisoning have caused many clinicians to ask whether lesser levels of lead than those producing frank encephalopathy result in subtler forms of brain injury.

This controversial question is made more difficult by the often close association of lead exposure with poverty and its attendant troubles, by the lack of sensitive clinical indicators during the peak exposure period in early childhood, and by problems in reliably measuring past exposure in older children — epidemiologic issues that are not peculiar to lead. It is not surprising that some investigators have found neuropsychologic deficits in children with low level exposure whereas others have not. Among the studies of low level lead and brain function, two are acknowledged by many as more rigorous and controlled. Burdé and Choate followed children identified as lead exposed, and controls matched on socioeconomic status and race, and found that the exposed group had a higher incidence of gross and fine motor dysfunction, irritability and impaired cognition at the age of four years. When the children were retested at seven to eight years of age the incidence of dysfunction had not decreased. This finding suggested that the deficit was fixed.[13] Perino and Ernhart studied black preschoolers with blood leads greater than 50 or less than 30 μg per deciliter.[14] Controlling for socioeconomic status, the authors reported a statistically significant deficit on the McCarthy scales of mental development. Al-

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though the correlation between parental and child IQ in the low-lead group was 0.52, in the high-lead group the correlation was 0.1. This finding suggests that another factor, presumably lead, disturbed the parent–child IQ correlation.

The effects of lead exposure during pregnancy deserve close consideration. Because lead crosses the placenta, it has been found in the umbilical-cord blood of newborns.[15] It has also been shown to be associated with severe reproductive damage in occupationally exposed women, and to be teratogenic in the laboratory animal. In Glasgow, Moore et al. identified 77 retarded and normal children matched for socioeconomic status and geography. The mother's residence during pregnancy was visited, and a first-flush water sample obtained. No normal children came from homes with a high content of lead in the water, although 11 of 64 retardates did. The discovery of blood samples on file from old phenylketonuria cards allowed retrospective blood lead determinations to be made on some of these subjects. Blood lead levels in retardates in the first week of life were significantly higher than in normal controls.[16] Wibberly reported higher placental lead levels in malformed and stillborn than in normal infants.[17]

The sources of lead for children are many and ubiquitous. Although new paint for household use will soon contain less than 0.06 per cent lead, thousands of houses have paint that contains well over 1 per cent. Many of these surfaces are flaking and peeling. Those that are not often chalk and contribute to lead in dust. Air-borne lead of small particle size is readily absorbed through the lung; large particles fall out into dust and are swallowed by children. The largest contribution to lead in the atmosphere is automobile emissions. Foodstuffs contribute a substantial amount of lead to the daily intake, much of which is added to the food during processing. Water may be a source in areas where the mineral content is low, the water acidic, and old leaded pipes still in place. Newsprint and some ceramic tableware may contain lead. Decorative decals and glazes on the exterior of some glasses contain considerable amounts of lead. This lead, leachable by dilute acids, can also flake off the glass, and represents a potential hazard for some children.

Although the relative contribution of each source varies with an individual's age, habits and circumstances, rough estimates can be constructed as guidelines. Dietary lead provides 50 to 250 μg per day external dose, of which 20 to 100 μg is absorbed by children. Urban dust contains lead in concentrations between 1000 and 5000 μg per gram. The ordinary hand-to-mouth activity of children transfers considerable quantities of dust-borne lead to the gut. Ingestion of 100 mg of dust containing 1000 ppm of lead would add 100 μg of external dose, of which 40 μg would be absorbed. Urban air lead levels range between 2 and 5 μg per cubic meter, but can be higher at selected sites and at peak traffic periods. Children have higher metabolic rates, are generally more active, and therefore have higher respiratory volumes relative to body size. Air-borne lead could provide an internal dose of between 16 and 40 μg per day for an adult, and 8 to 20 μg per day for a child. Paint, of course, provides lead in the highest concentration for children with pica. One single paint flake containing 1 per cent lead delivers an external dose of 10,000 μg.

Clearly, the lead burden of a given person is a sum of the multiple sources experienced by that person. The importance of one source should not be played off against another if effective prevention is to be obtained. Lead should be discovered first in the environment before it gets into children, and then removed. Effective housing inspection and abatement are complex, difficult and often contentious enterprises. They must, however, be pursued. Removing lead from air and dust are urgent public-health goals.

Each source has its own control or abatement cost, and each has a vested interest. The costs of removing lead from the environment are formidable, and many who identify themselves as realists say that society cannot support these costs.

The worth of the human brain is incalculable. The value we assign to it will be defined by the intensity with which we pursue or avoid the protection of its optimum development. Excess lead in the human environment is man-made and is, therefore, preventable by man.

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LEAD POISONING PREVENTION AND CONTROL

§ 190. Statewide program; director; advisory committee

The department shall establish a statewide program for the prevention, screening, diagnosis and treatment of lead poisoning, including elimination of the sources of such poisoning, through such research, educational, epidemiological and clinical activities as may be necessary.

The commissioner shall appoint a lead poisoning control director, who shall serve at the pleasure of the commissioner. The director shall be responsible, subject to the authority of the commissioner, for carrying out and administering all programs created pursuant to this and the following nine sections. As used in the following nine sections, "Director" shall refer to the lead poisoning control director.

The director may contract with any agencies, individuals or groups for the provision of necessary services, subject to appropriation; and shall issue and from time to time, amend, such rules and regulations as may be necessary.

The governor shall appoint an advisory committee for the lead poisoning prevention program, which shall consist of nine members, at least four of whom shall be physicians or persons active in the field of public health and who shall serve at the pleasure of the governor. At least two members of said advisory committee shall be parents of children under six years of age who reside in lower-income urban areas. The committee shall advise the director on matters of policy; shall be consulted by the director prior to the issuance of rules and regulations; and shall perform such other duties as the director may request. The members of the advisory committee shall not be paid for their services, but they shall be reimbursed for travel and other expenses necessary for the performance of their duties. As used in the following nine sections, "advisory committee" shall refer to said committee.

Added by St.1971, c. 1081, § 1.

§ 191. Reports of lead poisoning; notifications to agencies; records

Any examining physician, hospital, public health nurse or other diagnosing person or agency shall report to the director the existence and circumstances of each case of lead poisoning known to them and not previously reported. Such reports shall be made on forms prescribed by the director, and shall be submitted not later than three days after said person or agency first diagnoses or is informed of such case. The director shall by regulation with the advice of the advisory committee and in accordance with sound medical practice define the terms "lead poisoning" and "previously reported".

When a case of lead paint poisoning is reported to the director, he shall inform such local boards of health, public health agencies and other persons and organizations as he deems necessary; provided, however, that the name of any individual contracting lead poisoning shall not be included unless the director determines that such inclusion is necessary to protect the health and well-being of the affected individual.

The director shall maintain comprehensive records of all reports submitted pursuant to this section. Such records shall be geographically indexed in order to determine the location of areas of relatively high incidence of lead poisoning. Such records shall be public records, subject to the provision of the preceding paragraph relating to the names of individuals.

Added by St.1971, c. 1081, § 1.

§ 192. Educational and publicity program

The director shall institute an educational and publicity program, in order to inform the general public, and particularly parents of children residing in areas of significant exposure to sources of lead poisoning; teachers, social workers and other human service personnel; owners of residential property, particularly property constructed previous to the year nineteen hundred and forty-five; and health services personnel, and particularly interns, residents and other intake personnel at major hospitals, of the dangers, frequency, and sources of lead poisoning, and the methods of preventing such poisoning.

Added by St.1971, c. 1081, § 1.

§ 193. Early diagnosis program; examination and reports; records

The director shall establish a program for early diagnosis of cases of lead poisoning. Such program shall, to the extent permit-

ted by appropriations, systematically examine all children under six years of age residing within the commonwealth for the presence of lead poisoning. Such examinations shall be made by such means and at such intervals as the director shall by regulation determine may be medically necessary and proper. Such program shall employ, to the extent possible, residents of the areas in which screening and examinations are conducted, which residents shall not be subject to the provisions of chapter thirty-one, unless required as a condition for receipt of federal funds, or section nine A of chapter thirty.

Such program of diagnosis shall, to the extent that all children residing in the commonwealth are not systematically examined, give priority in examinations to those children residing, or who have recently resided, in areas were significant numbers of lead poisoning cases have recently been reported or where other reliable evidence indicates that significant numbers of lead poisoning cases may be found.

When the director is informed of a case of lead poisoning pursuant to section one hundred and ninety-one, or otherwise, he shall cause to have examined all other children under six years of age, and such other children as he may find advisable to examine, residing or recently residing in the household of the victim, unless the parents of such child object to said examination because it conflicts with their religious beliefs and practices. The results of such examinations shall be reported to the director, to the person or agency reporting the original case pursuant to section one hundred and ninety-one, and to such other persons or agencies as the director deems advisable.

The director shall maintain comprehensive records of all examinations conducted pursuant to this section. Such records shall be geographically indexed in order to determine the location of areas of relatively high incidence of lead poisoning. Such records shall be public records, subject to the provision of section one hundred and ninety-one relating to the names of examined individuals. A summary of the results of all examinations conducted pursuant to this section shall be released quarterly, or more frequently if the director so determines, to all interested parties.

All cases or probable cases of lead poisoning, as defined by regulation by the director, found in the course of examinations conducted pursuant to this section shall be reported immediately to the affected individual, to his parent or legal guardian if he is a minor, and to the director. The director shall inform such persons or agencies as he deems advisable of the existence of such case or probable case, subject to the provision of section one hundred and ninety-one relating to the names of individuals.

Added by St.1971, c. 1081, § 1.

§ 194. Detection of sources of lead poisoning; inspection; search warrant; notice to interested parties; examination of children; reports; records

The director shall establish a comprehensive program for detection of sources of lead poisoning. Such program shall attempt, to the extent permitted by appropriations, to locate all dwellings in which the paint, plaster or other accessible substance contains dangerous amounts of lead. The means of detection, and the amount of lead that produces the danger of lead poisoning, shall be determined by regulation by the director in accordance with sound medical practice and current technical knowledge.

Such program of detection shall, to the extent that all appropriate dwellings are not inspected, give priority in inspections to those dwellings located in areas where significant numbers of lead poisoning cases have recently been reported, and in which children under six years of age reside. Such program shall employ, to the extent possible, residents of the areas in which inspections are conducted, which residents shall not be subject to the provisions of chapter thirty-one, unless required as a condition for receipt of federal funds, or section nine A of chapter thirty.

Upon the request of any occupant, the director shall cause to have the occupant's premises inspected within a reasonable time, not to exceed ten days, unless systematic inspection of the area in which the person requesting the inspection resides is scheduled within thirty days, in which case said inspection may be deferred up to twenty additional days.

When the director is informed of a case of lead poisoning pursuant to sections one hundred and ninety-one or one hundred and ninety-three, or otherwise, he shall cause to have inspected the dwelling in which the victim resides, or has recently resided, if the occupants of said dwelling consent, after reasonable notice, to such inspection. If the occupant refuses admittance, an agent of the director or of any local board of health or code enforcement agency may apply for a search warrant to permit entry. A court may issue a warrant upon a showing that a victim of lead poisoning resides, or has recently resided in said dwelling. The findings of such inspection shall be reported to the director and to the appropriate enforcement authorities set out in section one hundred and ninety-eight.

A dangerous level of lead found in a dwelling inspected pursuant to this section, or otherwise, shall be reported immediately to the owner of the building, all affected tenants, all mortgagees and lienholders of record, the appropriate enforcement authorities set out in section one hundred and ninety-eight, and the director. The director shall inform such other persons or agencies as he deems advisable, and shall cause to have prominently posted on all entrances

to said dwelling a notice that the dwelling contains dangerous amounts of lead paint or other materials which children should not be allowed to eat or chew. Such notice may not be removed until all premises have been found to comply with section one hundred and ninety-seven.

When a dangerous level of lead is found in a dwelling inspected pursuant to this section, or otherwise, the director shall cause to have examined all children under six years of age, and such other children as he may find advisable to examine, residing or who have recently resided in said dwelling. The results of such examinations shall be reported to the director, the affected individual and his parent or legal guardian. The director shall inform such other persons or agencies as he deems advisable, subject to the provision of section one hundred and ninety-one relating to the names of affected individuals.

The director shall provide by regulation for the implementation by local boards of health, code enforcement agencies and housing inspection agencies of the provisions of this section and the periodic reporting to him of the results of all inspections of dwelling units conducted hereunder by said boards and agencies.

The director shall maintain comprehensive records of all inspections conducted pursuant to this section. Such records shall be geographically indexed in order to determine the location of areas of relatively high incidence of dangerous lead levels. Such records shall be public records. A summary of the results of all inspections conducted pursuant to this section shall be released quarterly, or more frequently if the director so determines, to all interested parties.

Added by St.1971, c. 1081, § 1. Amended by St.1974, c. 449, § 1.

§ 195. State laboratory for lead and lead poisoning detection; specimen analysis; fee; report as prima facie evidence

The commissioner shall establish, within the Bureau of Institute of Laboratories, a state laboratory for lead and lead poisoning detection. Said laboratory shall analyze specimens received from children for the presence of lead poisoning, and samples of paint and other materials for dangerous levels of lead.

Said laboratory shall analyze tests and samples submitted by persons and agencies not within the department as its facilities permit, and may charge for such services a fee not greater than the cost to it of such services. A copy of the report of said laboratory or any division thereof, certified as a true copy by the custodian of

the records of said laboratory, shall be admissible in any judicial proceeding without further authentication by either the laboratory or by the agency for which said report was made and shall be prima facie evidence of the facts stated therein.

Added by St.1971, c. 1081, § 1. Amended by St.1973, c. 149.

§ 196. Prohibited acts; punishment; embargo of personal property

(*a*) No person shall apply or cause to be applied any lead-based paint, glaze or other substance to any toy, furniture, cooking, drinking, or eating utensil, or interior or exterior surface or fixture of any dwelling; and no person shall sell, expose for sale, deliver, give away or possess with intent to sell, deliver or give away any toy, furniture, cooking, drinking or eating utensil to which any lead-based paint, glaze or other substance has been applied.

Any paint, glaze or other substance shall be deemed to be lead-based when it contains more than one-half of one per centum lead by weight (calculated as lead metal) in the total non-volatile content of liquid paints or in the dried film of paint or glaze already applied, or when it contains a substantially equivalent amount of lead measured by such alternative reliable method of measurement as the director shall by regulation establish.

Any person who violates the provision of this subsection shall be punished by a fine of not less than one hundred dollars nor more than five hundred dollars for each violation. Each article, surface or fixture to which a lead-based substance is applied shall constitute a separate violation. Any person who willfully violates the provisions of this subsection shall be punished by imprisonment for not more than three months for each violation.

Any article of personal property in violation of this subsection may be embargoed by the director in the manner provided in section one hundred eighty-nine A of chapter ninety-four.

(*b*) No person shall sell, expose for sale, deliver, give away or possess with intent to sell, deliver or give away any lead-based paint, glaze or other surface covering including raw lead or the raw lead compounds utilized in the home manufacturing of glazes as defined in subsection (*a*); provided, however, that the director may by regulation with the concurrence of a majority of the advisory committee exempt from the provisions of this subsection certain lead-based paints that are not intended or suitable for use on or within residential premises, and are not advertised or labeled as intended or suitable for such uses, and are not sold to the general public on a retail basis, when he finds with substantial certainty that the sale or use of said paints will not result in the exposure of chil-

dren younger than six years of age to said paints and will not result in an additional danger to life or health for such children or for the general public. The director may by regulation with the concurrence of a majority of the advisory committee exempt from the provisions of this subsection certain lead-based ceramic glazes or the raw lead and raw lead compounds utilized in the home manufacturing of glazes on such terms as he finds will not result in an additional danger to life or health.

Whoever violates the provisions of this subsection shall be punished by a fine of not less than two hundred dollars nor more than five hundred dollars for each violation. Each can, bottle or other container of any prohibited substance shall constitute a separate violation. Whoever willfully violates the provisions of this subsection shall be punished by imprisonment for not more than six months for each violation. Any article or substance in violation of this subsection may be embargoed by the director in the manner provided in section one hundred eighty-nine A of chapter ninety-four.

Added by St.1971, c. 1081, § 1. Amended by St.1971, c. 1081, § 2; St. 1973, c. 410.

§ 197. Duty of owner of residential premises; removal or cover of offending paint or material

Whenever a child or children under six years of age resides in any residential premises in which any paint, plaster or other accessible materials contain dangerous levels of lead as defined pursuant to section one hundred and ninety-four, the owner shall remove or cover said paint, plaster or other material so as to make it inaccessible to children under six years of age. Whenever any such residential premises containing said dangerous levels of lead undergoes a change of ownership and as a result thereof, a child or children under six years of age will become a resident therein, the new owner shall remove or cover said paint, plaster or other material so as to make it inaccessible to such children.

Repainting with non-lead-based paint, without removal of the offending paint, plaster or other material shall not constitute compliance with this section. Such removal or covering shall be performed as follows:—

(*a*) All peeling paint, plaster or other material, on both interior and exterior surfaces and fixtures, shall be removed or adequately covered.

(*b*) Paint, plaster or other material that is not peeling shall be removed or covered on window sills; door frames below the four-foot level; windows, including mullions, below the four-foot level; stair rail spindles; stair treads from the lip to the riser on bottom

and four inches back from the lip on the top of the tread; doors below the four-foot level and four inches from all edges; stair rails; porch railings; and all other exterior and interior surfaces or fixtures that may be readily chewed by children.

This duty shall apply to every owner of residential premises whenever a child or children under six years of age reside therein or whenever such premises undergoes a change of ownership and as a result thereof a child or children under six years of age shall reside therein, whether or not his premises have been inspected pursuant to section one hundred and ninety-four or otherwise. This section shall be strictly construed and enforced so as to best protect the safety of residents of such dwellings.

Added by St.1971, c. 1081, § 1.

§ 198. Violations and enforcement of sections 196 and 197

Any violation of sections one hundred and ninety-six and one hundred and ninety-seven may be treated by any party as a violation of the state sanitary code and all procedures and remedies applicable to such violations of said sanitary code shall be available to correct, deter or punish violations of said sections. The district and superior courts shall have jurisdiction to enforce the provisions of said sections to the same extent that said courts have jurisdiction to enforce said sanitary code.

All local boards of health or other code enforcement agencies, including in the city of Boston the commissioner of housing inspection shall enforce sections one hundred and ninety-six and one hundred and ninety-seven in the same manner and with the same authority as they may enforce the sanitary code. The director shall provide by regulation for the implementation by local boards of health, code enforcement agencies and housing inspection agencies of the provisions of this section and the periodic reporting to him of the results of all actions undertaken hereunder by said boards and agencies.

The director shall have concurrent responsibility and authority to enforce sections one hundred and ninety-six and one hundred and ninety-seven and in so doing shall have available to him all powers and authority which shall be available to local boards of health pursuant to sections one hundred twenty-seven A through one hundred twenty-seven K inclusive.

Violations of sections one hundred and ninety-six and one hundred and ninety-seven shall be treated as emergency matters, and shall be given preference by enforcing agencies and speedy hearings by district and superior courts.

Added by St.1971, c. 1081, § 1. Amended by St.1974, c. 449, § 2.

§ 199. Liability of owner of residential property; damages

The owner of any residential property shall be liable for all damages caused by his failure to perform the duties required of him pursuant to subsection (*a*) of section one hundred and ninety-six or section one hundred and ninety-seven.

The owner of any residential property who is notified of a dangerous level of lead in paint, plaster or other material present upon his premises pursuant to section one hundred and ninety-four, and who does not satisfactorily correct or remove said dangerous conditions shall in addition to the provisions of the preceding paragraph be subject to punitive damages, which shall be treble the actual damages found.

Added by St.1971, c. 1081, § 1.

105 CMR 460.000: REGULATIONS FOR LEAD POISONING PREVENTION AND CONTROL

Section

460.001 Purpose
460.002 Authority
460.003 Citation
(460.004 through 460.019: Reserved)
460.020 through 460.035: DEFINITIONS
(460.036 through 460.099: Reserved)
460.100 through 460.170: DANGEROUS LEVELS OF LEAD ON RESIDENTIAL DWELLINGS
(460.171 through 460.199: Reserved)
460.200 through 460.340: LEAD-BASED PAINTS, GLAZES AND OTHER SUBSTANCES
460.200 through 460.240: PROHIBITIONS UNDER G. L. c. 111, s. 196.
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460.300 through 460.340: EXEMPTIONS UNDER G. L. c. 111, s. 196(b).
(460.341 through 460.499: Reserved)
460.500 through 460.530: OFFICIAL TESTS AND MEASUREMENTS
(460.531 through 460.599: Reserved)
460.600 through 460.900: ENFORCEMENT PROCEDURES

460.001: Purpose

These regulations are set forth for the purpose of interpreting and implementing M. G. L. c. 111, s. 190-199, as most recently amended by Chapter 449 of the Acts of 1974, the provisions of law establishing a statewide program for the prevention and control of lead poisoning.

460.002: Authority

This chapter is adopted under authority of M. G. L. c. 111, s. 190 and 194-199, and pursuant to the provisions of M. G. L. c. 30A, s. 2(1).

460.003: Citation

This chapter shall be known, and may be cited as "Regulations for Lead Poisoning Prevention and Control in Massachusetts," 105 CMR 460.000. The short form of citation is "Massachusetts Lead Poisoning Regulations," 105 CMR 460.000.

DEFINITIONS

Section

460.020 Meaning of Terms
460.021 A.S.T.M.
460.022 A.S.T.M. Standard Method C 738
460.023 Commissioner
460.024 Code Enforcement Agency
460.025 Dangerous Level of Lead
460.026 Director
460.027 Dwelling, Residential Premises, or Residential Property
460.028 Inspector
460.029 Intact Surface
460.030 Lead-Based
460.031 Loose Paint
460.032 Mobile X-Ray Fluorescence Analyzer
460.033 State Laboratory for Lead and Lead Poisoning Detection
460.034 State Program

Section

460.035 State Sanitary Code
(460.036 through 460.099: Reserved)

DEFINITIONS

460.020: Meaning of Terms

Terms shall have the meanings set forth in 105 CMR 460.021 through 460.035 when used in M. G. L. c. 111, s. 190-199 and in these regulations, unless the context or subject matter clearly requires a different interpretation.

460.021: A.S.T.M.

"A.S.T.M." means American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.

460.022: A.S.T.M. Standard Method C 738

"A.S.T.M. Standard Method C 738" means the Standard Method of Test for Lead and Cadmium Extracted from Glazed Ceramic Surfaces designated C.738, issued by the American Society for Testing and Materials, as most recently published in the Annual Book of A.S.T.M. Standards, part 1.

460.023: Commissioner

"Commissioner" means the Commissioner of Public Health appointed pursuant to M. G. L. c. 27, s. 2.

460.024: Code Enforcement Agency

"Code Enforcement Agency" means local board of health, Commissioner of Housing Inspection in the City of Boston, or other agency responsible for enforcing the state sanitary code adopted pursuant to M. G. L. c. 111, s. 127A, and responsible, pursuant to M. G. L. c. 111, s. 193, for enforcing M. G. L. c. 111, s. 196 and 197.

460.025: Dangerous Level of Lead

(A) "Dangerous Level of Lead" means level of lead which materially endangers the health of children or adults, by producing a substantial and serious danger of lead poisoning.

(B) When present in paint, plaster, or other accessible substance in a residential dwelling, a dangerous level of lead shall be deemed, pursuant to M. G. L. c. 111, s. 194 and 196, to be the following:
(1) more than 0.5 percent lead by dry weight as measured by atomic absorption spectophotometry test of sample or by testing with 6 to 8 percent sodium sulfide solution.
(2) more than 1.2 milligrams lead per square centimeter of surface as measured on site by mobile x-ray fluorescence analyzer or comparable equipment.

460.026: Director

"Director" means the Lead Poisoning Control Director of the Lead Poisoning Prevention Program of the Department of Public Health, appointed by the Commissioner, pursuant to M. G. L. c. 111, s. 190.

460.110: continued

and four inches back from the lip on the top of the tread; doors below the four-foot level and four inches from all edges; stair rails; porch railings; and all other exterior and interior surfaces or fixtures that may be readily chewed by children.

(B) Notification and Posting. M. G. L. c. 111, s. 194 provides that a dangerous level of lead found in any building inspected pursuant to s. 194 shall be reported immediately to the owner, all affected tenants, all mortgagees and lienholders of record, appropriate code enforcement agencies and the director. The director shall cause to have posted on all entrances a notice that the dwelling contains dangerous amounts of lead paint or other materials which children should not be allowed to eat or chew. Said notice shall not be removed until all premises have been found to comply with M. G. L. c. 111, s. 197.

460.120: Methods of Removal

Lead-based paint or other materials shall be removed by the following methods:

(A) Loose paint on ceilings, woodwork, walls, and any other surfaces: Remove all lead-based paint down to base material (plaster, wood, wallboard, etc.), sand wood, patch and seal plaster, and paint or cover with lead-free material.

(B) Intact paint on woodwork or other surfaces which may be readily chewed by small children: Remove all lead-based paint below four feet from floor and four inches from edge, down to bare wood or other base material. Sand, prime and paint or cover with lead-free material.

(C) Loose lead-based putty: Remove and replace with non-lead-based putty.

(D) Only the following methods are adequate for removal of paint:
(1) Scraping with aid of non-toxic, non-flammable solvents or heat and finishing by sanding.
(2) Sanding, sandblasting or wire brushing.
(3) Burning off only when and where allowed by fire code.

460.130: Methods of Covering

Lead-based paint shall be covered by the following methods:

(A) Peeling paint on ceilings, woodwork, walls and any other surfaces: Remove loose material, patch and cover lead-based paint completely with material impregnable to small children, such as gypsum board, fiberglass, canvas-backed vinyl wall covering, formica, or tile. Fasten material securely by molding installed at junctions of walls and ceiling. Materials shall be vermin-proof and fire-resistant.

(B) Intact woodwork or any other surface readily chewed by children: Remove woodwork or other surface and replace with new window sills, doors, or other surface finished with lead-free materials, or cover completely with aluminum, plywood, formica, or similar material. Affix by nailing, cementing, gluing, or by any process adequate to prevent removal by a small child or by long-continued normal wear and tear.

(C) Contact paper or ordinary wall paper shall not be used in a covering process unless all lead-based paint has first been removed.

460.140: Cleaning of Areas Being Corrected

Areas being corrected shall be completely cleaned at the end of

460.140: continued

each working day so that children may return to the area in safety.

460.150: Use of Respirators During Paint Removal

Each individual removing lead-based paint by any method shall always wear an approved respirator, to lessen the danger of contracting acute lead poisoning.

460.160: Owners in Violation Subject to Damages

(A) Compensatory Damages. Owners of residential dwellings are hereby put on notice that, pursuant to M. G. L. c. 111, s. 199, the owner of any residential dwelling shall be liable for all damages caused by his failure to perform the duties required of him by M. G. L. c. 111, s. 197.

(B) Punitive Damages. Owners of residential dwellings are further put on notice that, pursuant to M. G. L. c. 111, s. 199, the owner of any residential property who is notified of a dangerous level of lead in paint, plaster, or other material upon his premises pursuant to s. 194, and who does not satisfactorily correct or remove said dangerous conditions, shall in addition to actual damages, be subject to punitive damages, which shall be treble the actual damages found.

460.170: Violations Punishable Under Sanitary Code

The Director and local boards of health may, pursuant to M. G. L. c. 111, s. 198, treat dangerous levels of lead on residential premises as Sanitary Code violations to which the following provisions of the State Sanitary Code, Article I, 105 CMR 400.000, apply:

(A) Any person who shall fail to comply with any order issued pursuant to the provisions of this code shall upon conviction be fined not less than ten nor more than five hundred dollars. Each day's failure to comply with an order shall consititute a separate violation. 105 CMR 400.700(A)

(B) Any person who shall violate any provision of this code for which penalty is not otherwise provided in any of the General Laws or in any other provision of this code shall upon conviction be fined not less than ten nor more than five hundred dollars. 105 CMR 400.700(B).

LEAD-BASED PAINTS, GLAZES AND OTHER SUBSTANCES

PROHIBITIONS UNDER M. G. L. c. 111, s. 196

Section

460.200 Acts Made Illegal
(460.201 through 460.209: Reserved)
460.210 C.111, s. 196(a) Offenses
(460.211 through 460.219: Reserved)
460.220 C. 111, s. 196(b) Offenses
(460.221 through 460.229: Reserved)
460.230 Civil Damages Under C. 111, s. 196(a)
(460.231 through 460.239: Reserved)
460.240 Embargo of Lead-Based Articles and Substances
(460.241 through 460.299: Reserved)

LEAD-BASED PAINTS, GLAZES AND OTHER SUBSTANCES

PROHIBITIONS UNDER M. G. L. c. 111, s. 196

460.200: Acts Made Illegal

Notice is hereby given that, pursuant to G. L. c. 111, s. 196:

(A) No person shall apply or cause to be applied any lead-based paint, glaze or other substance to any toy, furniture, cooking, drinking, or eating utensil, or interior or exterior surface of fixture of any dwelling.

(B) No person shall sell, expose for sale, deliver, give away or possess with intent to sell, deliver or give away any toy, furniture, cooking, drinking or eating utensil to which any lead-based paint, glaze or other substance has been applied.

(C) No person shall sell, expose for sale, deliver, give away or possess with intent to sell, deliver or give away, any lead-based paint, glaze or other surface covering, except as exempted by the Director.

460.210: C. 111, s. 196(2) Offenses

Notice is hereby given that, pursuant to M. G. L. c. 111, s. 196(a), any person who violates the provisions of s. 196(a) shall be punished by a fine of not less than one hundred dollars nor more than five hundred dollars for each violation. Each article, fixture or surface to which a lead-based substance is applied shall constitute a separate violation. Any person who willfully violates the provisions of this subsection shall be punished by imprisonment for not more than three months for each violation.

460.220: C. 111, s. 196(b) Offenses

Notice is hereby given that, pursuant to M. G. L. c. 111, s. 196(b), any person who violates the provisions of s. 196(b) shall be punished by a fine of not less than two hundred dollars nor more than five hundred dollars for each violation. Each can, bottle or other container or any prohibited substance shall constitute a separate violation. Any person who willfully violates the provisions of this subsection shall be punished by imprisonment for not more than six months for each violation.

460.230: Civil Damages Under C.111, 196(a)

Owners of residential dwellings are hereby put on notice that, in addition to penalties set forth in 105 CMR 460.210 and 460.220, M. G. L. c. 111, s. 199 provides that the owner of any residential property shall be liable for all damages caused by violation of s. 196(a).

460.240: Embargo of Lead-Based Articles and Substances

Notice is hereby given that, pursuant to M. G. L. c. 111, s. 196(a) and (b), the Director may embargo any article or substance in violation of either subsection, in the manner provided by M. G. L. c. 94, s. 189A.

EXEMPTIONS UNDER M. G. L. c. 111, s. 196(b)

Section

460.300 Exemptions Available for Certain Products
(A) Exemptions by Director
(B) Prior Exemptions Continue in Effect
(C) Emergency Rescission of Exemptions
(460.301 through 460.309: Reserved)
460.310 Terms and Conditions of Exemptions

EXEMPTIONS UNDER M. G. L. c. 111, s. 196(b): continued

Section

(460.311 through 460.319: Reserved)
460.320 Notification of Director if Formula of Exempted Product Is Modified; New Exemption May Be Required
(A) Notification of Director
(B) Director's Determination
(460.321 through 460.329: Reserved)
460.330 Refusal and Revocation of Exemptions
(460.331 through 460.339: Reserved)
460.340 Administrative Appeals from Refusals and Revocations
(460.341 through 460.499: Reserved)

EXEMPTIONS UNDER M. G. L. c. 111, s. 196(b)

460.300: Exemptions Available for Certain Products

(A) Exemptions by Director. The following lead-based paints shall be exempted by the Director from the provisions of M. G. L. c. 111, s. 196(b), upon compliance with the terms and conditions set forth in c. 111, s. 196(b) and 105 CMR 460.300:

(1) lead-based paints for application to artists' canvases;

(2) touch-up paints for metal machinery, appliances, vehicles, water craft, when sold in containers small enough to preclude any reasonable risk of use in buildings or furniture;

(3) lead primers for application to small craft hulls, when sold at retail only through boat yards, marinas, ship chandleries and businesses dealing in marine sales;

(4) original finish paints intended for factory application upon manufactured products not intended for use in homes or in other structures, such as schools or day care centers, where children commonly spend periods of over one-half hour;

(5) lead primers for structural metals, vehicles, and watercraft;

(6) refinishing paints for automotive, agricultural, and industrial equipment;

(7) paints for industrial and commercial building maintenance, including traffic and safety marking paints;

(8) graphic art paints marketed for application to billboards, road signs, and other similar uses;

(9) hobby-type glazes or frits.

(B) Prior Exemptions Continue in Effect. Exemptions given by the Director under the "Regulations for Lead Poisoning Program" in effect prior to April 18, 1975, shall remain in effect under the provisions of this chapter.

(C) Emergency Rescission of Exemption. The Director may rescind exemption under 105 CMR 460.340(A) above on an emergency basis pursuant to M. G. L. c. 30A, s. 2(3), if he finds that continued exemption would result in the likelihood of a grave and immediate danger to the public health. Thirty days after any such temporary rescission, the Director shall hold a public hearing pursuant to M. G. L. c. 30A, s. 2(3), after providing written notice of the hearing to the manufacturer and wholesaler of any paint product affected.

460.310: Terms and Conditions of Exemptions

The Director will exempt lead-based paints listed in 105 CMR 460.300 from the provisions of M. G. L. c. 111, s. 196(b) and the following terms and conditions:

(A) The manufacturer has submitted to the director prior written notification of the amount of lead by dry weight in the product, and the means by which this concentration has been verified.

460.310: continued

(B) The wholesaler of said product has submitted to the Director prior written notification of the means he exercises to assure the marketing of the product only in specified channels.

(C) In the case of exemptions 1-8 in 105 CMR 460.300, the paint is labelled in the manner set forth herein on the front and back of container:

TABLE 1.

Container Size	Wording	Type Size
Less than 1/2 pint or 8 oz. by weight	POISON-CONTAINS LEAD	Equal to largest type on label but at least 10 points
1/2 pint or 1 pint	POISON-CONTAINS LEAD Do not use on toys, furniture, homes, or any structure where children could chew or eat this paint	Equal to largest type on label but at least 10 points
1 quart	POISON-CONTAINS LEAD Do not use on toys, furniture, homes, or any structure where children could chew or eat this paint	First three words 24 points type -- remainder 12 points type
1 gallon or more	POISON-CONTAINS LEAD Do not use on toys, furniture, homes, or any structure where children could chew or eat this paint	First three words 48 points type -- remainder 18 points type

(D) In the case of exemption 9 in 105 CMR 460.300, EITHER:

(1) Each container shall be clearly labelled in the largest type used anywhere on the container, but not less than 10 point type, with the following warning: "DANGER -- CONTAINS LEAD. This material must not be applied to utensils that come in contact with food or drink. Keep away from small children. May be harmful if swallowed.".

OR:

(2) The following two conditions shall be met:

(a) The manufacturer shall, before 1 July 1975, or in the case of newly produced or modified glazes before said glaze is offered for sale in the Commonwealth of Massachusetts, submit to the director a report from an independent testing laboratory certifying that the individual glaze or frit when fired at cone 06 and tested as in section 4.10 of these regulations does not release more lead than 2 parts per million.

(b) Each container of said glaze or frit is clearly and conspicuously labelled with the following warnings: "CAUTION -- CONTAINS LEAD. This material may be safely applied to utensils that come in contact with food or drink only when fired under recommended conditions at cone 06 or hotter. Keep away from small children. May be harmful if swallowed."

460.320: Notification of Director if Formula of Exempted Product Is Modified; New Exemption May Be Required

(A) Notification of Director. The manufacturer and wholesaler of a lead-based paint product exempted by the Director under these regulations must provide the Director with prior written notification of any modifications in the formula affecting lead content of the exempted paint product, and of any modifications in its manner of distribution.

(B) Director's Determination. If the Director determines that the modifications substantially change the conditions under which the original product was exempted, the product as modified, or under the new marketing circumstances, will not be exempt from the provisions of M. G. L. c. 111, s. 196(b), and the Director will consider a separate exemption under this section.

460.330: Refusal and Revocation of Exemptions

The Director may refuse to grant an exemption, or may revoke an exemption granted under this section, if he determines that the manufacturer or wholesaler of the lead-based paint product has not demonstrated that the product falls within one of the categories in 105 CMR 460.300 or has not complied with the conditions set forth in G. L. c. 111, s. 196(b) and 105 CMR 460.310. Such refusal or revocation shall be in the form of a written notification with a statement of reasons therefor.

460.340: Administrative Appeal from Refusals and Revocations

The manufacturer or wholesaler affected shall have the right to appeal any refusal to grant an exemption, or revocation of an exemption, under this section.

(A) In order to exercise the right of an appeal provided hereunder, the manufacturer or wholesaler, within 20 days of receipt of the Director's written statement of reasons, shall file a written claim of appeal which sets forth with specificity his objections to the Director's action.

(B) Whenever there are genuine issues of material fact in dispute, the appeal shall include an evidentiary hearing conducted under the M.O.P.H. Adjudicatory Procedures 105 CMR 1.000. The final decision in any appeal shall be made by the Director.

OFFICIAL TESTS AND MEASUREMENTS

Section

460.500 Issuance of Official Reports
(460.501 through 460.509: Reserved)
460.510 Approved Testing Methodology
(460.511 through 460.519: Reserved)
460.520 Authorized Test Personnel
(460.521 through 560.529: Reserved)
460.530 State Laboratory Reports as Prima Facie Evidence

OFFICIAL TESTS AND MEASUREMENTS

460.500: Issuance of Official Reports

The State Laboroatory for Lead and Lead Poisoning Detection and local code enforcement agencies may conduct inspections, tests, and measurements and issue official reports for the purpose of recording the presence of dangerous levels of lead.

460.510: Approved Testing Methodology

(A) When used to determine compliance with M. G. L. c. 111, s. 197, official reports under 105 CMR 460.550, shall be based upon methods of measurement specified in 105 CMR 460.025; provided, however, that in no case shall a local code enforcement agency use the atomic absorption spectrophotometry test, as specified in 105 CMR 460.025 (13)(1), except with prior approval of the Director.

(B) When used to determine compliance with M. G. L. c. 111, s. 196(a) or (b) such reports shall be based upon methods of measurement specified in 105 CMR 460.025 or 460.027, as appropriate.

460.520: Authorized Test Personnel

Tests and measurement under 105 CMR 460.500 shall be performed by duly authorized employees or agents of the State Laboratory or of the code enforcement agency.

460.530: State Laboratory Reports as Prima Facie Evidence

A copy of the report of the State Laboratory for Lead and Lead Poisoning Detection or any division thereof issued in accordance with 105 CMR 460.500, when certified as a true copy by the custodian of records of said laboratory, shall, pursuant to G. L. c. 111, s. 195, be admissible in any judicial proceeding without further authentication by either the Laboratory or by the agency for which the report was made, and shall be prima facie evidence of the facts stated therein.

ENFORCEMENT PROCEDURES

Section

460.600 Concurrent Enforcement Authority
(460.601 through 460.609: Reserved)
460.610 Application of State Sanitary Code
(460.611 through 460.619: Reserved)
460.620 Emergency Matters
(460.621 through 460.699: Reserved)
460.700 Enforcement by Local Code Enforcement Agencies
(A) Responsibilities Generally
(B) For Emergency Matters
(460.701 through 460.709: Reserved)
460.710 Inspection Priorities
(460.711 through 460.719: Reserved)
460.720 Procedures for Inspection
(A) Identification of Painted Surfaces
(B) Loose Paint
(C) Intact Paint
(D) Common Halls and Passageways by Exteriors
(460.721 through 460.729: Reserved)
460.730 Testing Methods and Standards
(A) Testing with Mobile X-Ray Fluorenscence Analyzer
(B) Testing with 6-8 Percent Sodium Sulfide Solution
(C) Testing by Atomic Absorption Spectrophotometry
(460.731 through 460.739: Reserved)
460.740 Notice of Inspection Results
(A) Posting of Notice
(B) Report of Inspection
(C) Notice to Owner
(D) Notice to Tenant
(460.741 through 460.749: Reserved)
460.750 Reinspections
(460.751 through 460.759: Reserved)
460.760 Reports to Director of State Program
(460.761 through 460.799: Reserved)

ENFORCEMENT PROCEDURES: continued

Section

460.800 Judicial Proceedings
(A) Initiation
(B) Repair by Code Enforcement Agency Under Court Order
(C) Prosecution of Judicial Proceedings
(460.801 through 460.899: Reserved)
460.900 Hearings
(460.901 through 460.989: Reserved)
460.900 Effective Date of Regulations
(460.901 through 460.999: Reserved)

ENFORCEMENT PROCEDURES

460.600: Concurrent Enforcement Authority

The Director and local boards of health or other code enforcement agencies have concurrent authority, pursuant to M. G. L. c. 111, s. 198, to enforce M. G. L. c 111, s. 196 and 107.

460.610: Application of State Sanitary Code

Such enforcement authorities may utilize all powers and authority provided to local boards of health by M. G. L. c 111, s. 127A-127K. Any violation of M. G. L. c. 11, s. 196 and 197 may, pursuant to s. 198, be treated as a violation of the State Sanitary Code, and all procedures, and remedies applicable to such violations shall be available to correct, deter, or punish violations of said sections. Also see M. G. L. c 111, s. 194; 105 CMR 460.170 and 400.000.

460.620: Emergency Matters

Violations of M. G. L. c. 111, s. 196 and 197 shall, pursuant to s. 198, be treated as emergency matters, and shall be given preference by enforcing agencies, and speedy hearings by district and superior courts.

460.700: Enforcement By Local Code Enforcement Agencies

(A) Responsibilities Generally. Pursuant to M. G. L. c. 111, s. 194 and 198, as most recently amended by St. 1974 c. 449, local code enforcement agencies have the responsibility for making inspections of residential dwellings and other buildings which children utilize, and for enforcing the lead poisoning laws, consistent with their Sanitary Code inspection and enforcement responsibilities, under M. G. L. c. 111, s. 127A-K.

(B) For Emergency Matters. Violations of lead paint provisions of M. G. L. c. 111, s. 196 and 197 produce immediate danger of lead poisoning and constitute emergency matters pursuant to M. G. L. c. 111, s. 198 and within the meaning of the State Sanitary Code, 105 CMR 400.200(B) and the local code enforcement agencies shall treat them as emergency matters. Therefore, the local code enforcement agencies shall follow the time limitations established in 105 CMR 460.710, 460.740, 460.750, 460.800 and 460.900, and shall give preference to violations of s. 196-7 over all other violations except other emergency matters.

460.710: Inspection Priorities

Local code enforcement agencies shall carry out inspections according to the following priorities until such time that all residential dwellings and child care facilities can be systematically inspected:

460.710: continued

(A) Dwellings in which a child lives, who is found to have an increased body lead content, identified by a blood lead concentration of greater than 39 micrograms per deciliter (mcg/dl). Such residential dwellings shall be inspected within one working day of notification of the local code enforcement agency by child's physician, hospital, clinic, or by the State Lead Poisoning Prevention Program, except that if the agency receives more than four such notices on any working day, the inspection may be performed one day later for each additional four notices received.

(B) All dwellings in the same building and in buildings adjacent to residential dwellings described under 105 CMR 460.710(A), in which a child under 6 years of age lives. Such residential dwellings shall be inspected within five working days after the inspection of units identified under 105 CMR 460.710(A).

(C) All dwellings in whch a child under 6 years of age lives or will live which are being inspected for any other violation of the Sanitary Code. Inspections for dangerous levels of lead shall be carried out at the time of inspection for other reasons.

(D) Dwellings in which a child under 6 years of age lives for which such an inspection is requested by tenant or owner. These inspections shall be carried out within 10 days of receipt of request.

(E) Dwellings about to be rented or sold to a family with a child under 6 years of age. These shall be inspected before final sale or lease.

(F) All dwellings in an area in which dangerous levels of lead have been found. These shall be inspected as expeditously as possible.

(G) Local code enforcement agencies shall inspect for dangerous levels of lead on all premises which are to be used as child care facilities upon request of the Office for Children, the operator of the facility, or a parent of a child who may attend said facility. These shall be inspected within 10 days of receipt of request.

460.720: Procedures for Inspection

Inspectors shall observe the following procedures in any inspection to detect dangerous levels of lead.

(A) Identification of Painted Surfaces. Clearly identify the location of paint tested in the residential dwelling in accordance with the following instructions, using the form supplied by Lead Poisoning Prevention Program.

(1) Fill out diagrammatic floor plan according to instructions. Indicate on plan: position of common hall, entry, each room, stairs and porch. (Use one block only except for interior hall; number bedrooms.)

(2) Identify paint site tested by room and side (A, B, C, D in reference to street side as indicated on diagram).

(3) Identify paint location as one of the following: wall, ceiling, floor, window (including sash and mullions), window frame, window sill, door, door frame, closet door, closet interior, bannister rail, bannister spindle, porch rail, porch spindle, porch wall, porch ceiling, porch floor, stairs up, stairs down, cabinets, bottom molding, top molding, dado, or chair molding.

(4) Indicate whether paint is loose or whether pain is on an intact surface.

(B) Loose Paint. Test surfaces with loose paint at any height.

460.720: continued

(C) Intact Paint. Test intact paint on window sills; door frames below the four-foot level; windows, including mullions, below the four-foot level; stair rail spindles; stair treads from the lip to the riser on bottom and four inches back from the lip on the top of the tread; doors below the four-foot level and four inches from all edges; stair rails; porch railings; and all other exterior and interior surfaces or fixtures that may be readily chewed by children.

(D) Common Halls and Passageways to Exteriors. These procedures for inspection apply to halls and stairways between apartments and exteriors of buildings as well as to interiors of individual apartments.

460.730: Testing Methods and Standards

The following tests are acceptable methods of determining whether pain contains a dangerous level of lead under 105 CMR 460.025 and 460.510. Local code enforcement agencies shall follow the procedures set forth herein in performing said tests:

(A) Testing with Mobile X-Ray Fluorescence Analyzer. Paint lead concentrations greater than 1.2 milligrams per square centimeter (mg/cm^2) constitute a dangerous level of lead. The operator shall perform test as follows: Use an average of 5-6 readings for values between 0.8 and 2.0 mg/cm^2. Calibrate the machine at the beginning and end of each day allowing a 10 minute warm-up period. Always charge the machine overnight. If high values are found on a surface, repeat the test one foot or more higher or lower and one foot or more to either side to make sure the high value is not due to underlying lead in or on a pipe or beam. The instrument probe shall be flush with the painted surface.

(B) Testing with 6-8 Percent Sodium Sulfide Solution. Paint lead concentrations greater than 0.5% by dry weight constitute a dangerous level of lead. In order to test peeling or flaking paint, place a drop of the solution on both the inner and outer surfaces and on the edge of the chip. Cut intact surfaces to be tested down to the wood or plaster and place a drop of the solution in the incision. The formation of a light to dark gray color indicates lead in a concentration of 0.6 to 4%. A black color indicates lead in a concentration of 5% or more. Provide fresh sodium sulfide solution every month. This test shall not be performed on iron or copper pipes, railings or radiators. See 105 CMR 460.025(B)(1).

(C) Testing by Atomic Absorption Spectrophotometry. Code enforcement agencies may utilize this method only with the prior approval of the Director. The Director will supply detailed procedures on request.

460.740: Notice of Inspection Results

Local code enforcement agencies shall follow the procedures after an inspection has been made:

(A) Posting of Notice. Immediately after completing an inspection which reveals dangerous amounts of lead, the agency shall post prominently a notice that the dwelling cotains a dangerous level of lead which a child should not be allowed to eat or chew, on each entrance to the dwelling. The notice shall not be removed until the premises have been found to comply with M. G. L. c. 111, s. 197.

(B) Report of Inspection. Whenever a dangerous level of lead is found in a residential dwelling, the agency shall report this to the owner, affected tenants, and to the Director of the Lead Poisoning Prevention Program. This report shall include a properly completed copy of the inspection form supplied by the State Program and shall be

460.740: continued

sent by the end of the first full working day following the inspection. A copy of the report shall also be sent to mortgagees and lienholders of record.

(C) Notice to Owner. The agency shall provide notice to the owner of the building containing a dangerous level of lead, on a form supplied or approved by the Director, including a statement that the dangerous level of lead violates M. G. L. c. 111, s. 197 and 199 and is considered a violation of the State Sanitary Code, which may endanger or materially impair the health of occupants, especially children. The agency shall issue an order to correct the dangerous level of lead within 7 days, and information on methods of correcting the dangerous level of lead, as set forth in 105 CMR 460.110 through 460.150. See M. G. L. c. 111, s. 127A.

(D) Notice to Tenant. Notice to the tenant of the dangerous level of lead shall be provided on a form supplied by the Director, which informs him of his rights and remedies. See M. G. L. c. 111, s. 127B.

460.750: Reinspections

Local code enforcement agencies shall follow the reinspection procedures below:

(A) Reinspection of all residential dwellings previously found to have dangerous levels of lead shall be carried out on the seventh working day after service of the legal notice and order to correct the violation of the Sanitary Code. Using one of the accepted methods of testing for lead in paint listed in 105 CMR 460.730, the code enfocement agency shall ascertain whether the old lead-based paint has been either completely removed or adequately covered. Newly-applied paint shall also be tested. Reinspections shall be performed in the same manner as original inspections pursuant to 105 CMR 460.720.

(B) Results of reinspection shall be recorded on the same type of forms used for original inspections. Completed copies shall be sent to each party listed in 105 CMR 460.740(B) within one working day after the reinspection.

(C) The code enforcement agency shall not approve the covering or removal of paint or other materials containing dangerous levels of lead unless performed in compliance with 105 CMR 460.110 through 460.150.

460.760: Reports to Director of State Program

Local code enforcement agencies shall send copies of all inspection and reinspection reports to the Director of the State Program at the same time they are sent to other parties pursuant to 105 CMR 460.740(B) and 460.750(B). In addition, each agency shall submit a report to the Director, on a form provided by him, by the 5th of each month, signed by the head of such agency, which report shall list the status of all uncorrected violations at the end of the previous month, all violations corrected during such month, what legal action has been taken regarding each uncorrected violation and the procedural history and current status of such legal action.

460.800: Judicial Proceedings

(A) Initiation. If on reinspection at the end of seven days, a dangerous level of lead still exists, the agency shall initiate judicial proceedings which may be either criminal proceedings seeking enforcement of penalties provided under M. G. L. c. 111, s. 196-199 and the Sanitary Code, 105 CMR 400.700(B); or a civil action for injunctive relief, brought pursuant to c. 111, s. 127A-C and c. 218, s. 19C, against

460.800: continued

the owner, and any other person who may be joined pursuant to M. G. L. c. 111, s. 127N, before the end of the next working day.

(B) Repair by Code Enforcement Agency Under Court Order. If the dangerous level of lead is not corrected within seven days after reinspection, after obtaining a court order from the superior court pursuant to M. G. L. c. 111, s. 127B or from the appropriate district court pursuant to M. G. L. c. 218, s. 19C, the local code enforcement agency may pursuant to c. 111, s. 127A and 127B either make the necessary repairs itself or contract with a private contractor to do so and bill the landlord or seek court receivership of rents to reimburse itself pursuant to c. 111, s. 127C or 127H, unless the tenant has elected to utilize his own rights or repair under c. 111, s. 127L.

(C) Prosecution of Judicial Proceedings. The agency shall diligently prosecute all judicial proceedings to enforce M. G. L. c. 111, s. 196-7 without substantial delay. The agency shall oppose all requests for continuances, or for the delay or relaxation of any deadline made by the person responsible for correcting any violation in any judicial or administrative proceeding.

460.900: Hearings

If a hearing is requested under the Sanitary Code, 105 CMR 400.200(B), and if the owner has complied with the order to correct the violations as required by this Code the hearing shall be provided within 10 days of request of hearing. The code enforcement agency shall issue a written decision within seven days after the hearing. No administrative hearing shall be held in connection with any violation of M. G. L. c. 111, s. 197, except pursuant to this regulation.

460.990: Effective Date of Regulations

The regulations in this chapter took effect on April 18, 1975 upon publication by the Secretary of State. They replaced and superseded the "Regulations for Lead Poisoning Prevention and Control" upon which a public hearing was held September 30, 1974, and which were filed with the Secretary of State on October 7, 1974, and the amendments thereto upon which a public hearing was held November 7, 1974, and which were filed with the Secretary of State on November 26, 1974. Both of those sets of regulations are hereby repealed effective April 18, 1975.

REGULATORY AUTHORITY

105 CMR 460.000: M. G. L. c. 111, ss. 190, 194-199.

(105 CMR 461.000 through 499.000: RESERVED)

APPENDIX VII

Commonwealth of Massachusetts

CHILDHOOD LEAD POISONING PREVENTION PROGRAM

305 SOUTH ST., JAMAICA PLAIN, MA

INSPECTION FORM

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INSPECTOR/AGENCY

CASE CODE

METHOD USED

☐ Na_2S (Pos. = Pb > 0.5%)

☐ X-RAY FLUORESCENCE (Pos. = Pb > 1.2 mg/cm²)

Address (Include Apt #) | City Code

CITY

LAST NAME OF CHILD | FIRST NAME | I | Birth Date MM DD YY | Sex

Parent/Guardian's Last Name | Parent/Guardian's First Name

Parent/Guardian's Telephone # _____

1 DWELL
2 DAY CARE SCHOOL
3 OTHER

OWNER OCC Y OR N

OWNS < 5 UNITS Y OR N

1 SINGLE
2. 2-4 APTS
3. 5 OR MORE

NO OF ROOMS INCLUDE BATHROOMS BUT NOT HALLS

OWNER'S NAME:	MORTGAGOR NAME:
OWNER'S ADDRESS:	MORTGAGOR ADD.:
CITY:	CITY
TEL.#:	

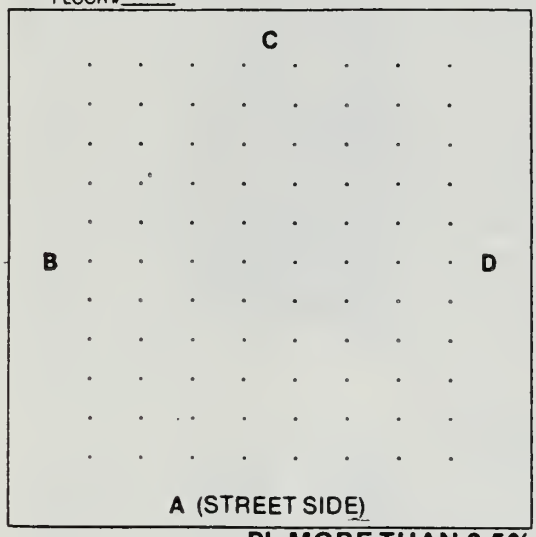
Book No. _____
Page # _____
Probate _____

REMARKS:

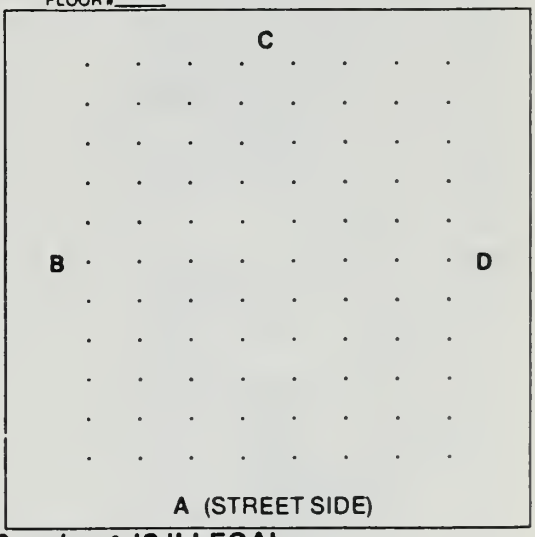
1 VICTIM
2 PAR REQ
3. HIGH INC
4 REPAIR
5 VACANCY
6 INSTITUTION
7 OTHER

REQ. DATE | INSP DATE | VIOLATION Y OR N

FLOOR # _____



FLOOR # _____



Pb MORE THAN 0.5% OR 1.2 mg/cm² IS ILLEGAL

SERVICE DATE | REINSP DATE | 1 REHAB 2. STARTED 3 NO WORK | INSPECTOR

REINSP DATE | 1 REHAB 2 STARTED 3 NO WORK | REINSP DATE | 1 REHAB 2. STARTED 3. NO WORK | REINSP DATE | 1 REHAB 2 STARTED 3 NO WORK

REINSP DATE | 1 REHAB 2 STARTED 3 NO WORK | DATE COMPLAINT SOUGHT | DATE SHOW CAUSE | INITIAL DATE ARRAIGN

ACTUAL DATE ARRAIGN | DATE PRETRIAL | INITIAL DATE TRIAL | FINAL DATE TRIAL | 1 DISMISSED VACANT 2 DISMISSED TECH 3 DISMISSED REHABED 4 ORDERED REHAB 5 ORDERED REHAB AND COURT COSTS 6 ORDERED REHAB AND FINE

APPEAL Y OR N | APPEAL TRIAL DATE | 1 UPHELD 2 MODIFIED 3 OVERTURNED | RIGHT TO REPAIR Y OR N | RENT WITHHOLD Y OR N

REHAB DATE | INSPECTOR | REHAB DONE BY 1 OWNER 2 CONTRACTOR 3 TENANT 4 VOLUNTEER 5 CITY/STATE | KNOWN CASH COST | # INSPECTIONS

SM-11/82-170874

5M 4/81 160980

INSPECTOR/AGENCY

Commonwealth of Massachusetts

CHILDHOOD LEAD POISONING PREVENTION PROGRAM

305 South St., Jamaica Plain, MA 02130

*INSPECTION FORM

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CASE CODE

ADDRESS OF INSPECTION (Include Apt. # or Floor)

OWNER'S NAME & ADDRESS

City

City Code

ROOM	SIDE	SOURCE	Pb	Loose	R	ROOM	SIDE	SOURCE	Pb	Loose	R
Kitchen		Upper Walls				Bathroom		Upper Walls			
		Lower Walls						Lower Walls			
		Chair rail						Chair rail			
		Baseboard						Baseboard			
		Door						Door			
		Door Casing-Jamb						Door Casing-Jamb			
		Door						Window Sill/Apron			
		Door Casing-Jamb						Window Casing/Header/Stops			
		Door						Window Sash/Mullions			
		Door Casing-Jamb						Exterior Sill/Parting bead			
		Door						Cabinets, Upper			
		Door Casing-Jamb						Cabinets, Lower			
		Window Sill/Apron						Cabinet Shelves, Lower			
		Window Casing/Header/Stops						Shelves			
		Window Sash/Mullions						Floor			
		Exterior Sill/Parting bead						Ceiling			
		Window Sill/Apron									
		Window Casing/Header/Stops									
		Window Sash/Mullions									
		Exterior Sill/Parting bead				Staircase		Upper Walls			
		Window Sill/Apron						Lower Walls			
		Window Casing/Header/Stops						Chair rail			
		Window Sash/Mullions						Treads			
		Exterior Sill/Parting bead						Risers			
		Cabinets, Upper						Railing Cap			
		Cabinets, Lower						Balusters			
		Cabinet Shelves, Lower						Newel Posts			
		Shelves						Stringer			
		Drawers						Baseboards			
		Floor						Window Sill/Apron			
		Ceiling						Window Casing/Header/Stops			
								Window Sash/Mullions			
								Exterior Sill/Parting beads			
								Ceiling			
Pantry		Upper Walls									
		Lower Walls				Staircase		Upper Walls			
		Chair rail						Lower Walls			
		Baseboard						Chair rail			
		Door						Treads			
		Door Casing-Jamb						Risers			
		Window Sill/Apron						Railing Cap			
		Window Casing/Header/Stops						Balusters			
		Window Sash/Mullions						Newel Posts			
		Exterior Sill/Parting bead						Stringer			
		Cabinets, Upper						Baseboards			
		Cabinets, Lower						Window Sill/Apron			
		Shelves						Window Casing/Header/Stops			
		Drawers						Window Sash/Mullions			
		Floor						Exterior Sill/Parting beads			
		Ceiling						Ceiling			

Pb MORE THAN 0.5% OR 1.2 mg/cm² IS ILLEGAL

REMARKS

INSPECTOR

Inspection Date

INSPECTOR/AGENCY

Commonwealth of Massachusetts

CHILDHOOD LEAD POISONING PREVENTION PROGRAM

305 South St., Jamaica Plain, MA 02130

*INSPECTION FORM

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CASE CODE

ADDRESS OF INSPECTION (Include Apt # or Floor)

OWNER'S NAME & ADDRESS

City Code

City

ROOM	SIDE	SOURCE	Pb	Loose	R	ROOM	SIDE	SOURCE	Pb	Loose	R
		Upper Walls						Window Sill/Apron			
Room		Lower Walls						Window Casing/Header/Stops			
		Chair rail						Window Sash/Mullions			
		Baseboard						Exterior Sill/Parting bead			
		Door						Window Sill/Apron			
		Door Casing-Jamb						Window Casing/Header/Stops			
		Door						Window Sash/Mullions			
		Door Casing-Jamb						Exterior Sill/Parting bead			
		Door						Closet Walls			
		Door Casing-Jamb						Closet Door-Interior			
		Window Sill/Apron						Closet Casing-Jamb			
		Window Casing/Header/Stops						Closet Baseboards			
		Window Sash/Mullions						Closet Shelves			
		Exterior Sill/Parting bead						Floor			
		Window Sill/Apron						Ceiling			
		Window Casing/Header/Stops									
		Window Sash/Mullions									
		Exterior Sill/Parting bead									
		Window Sill/Apron									
		Window Casing/Header/Stops									
		Window Sash/Mullions						Upper Walls			
		Exterior Sill/Parting bead				Room		Lower Walls			
		Window Sill/Apron						Chair rail			
		Window Casing/Header/Stops						Baseboard			
		Window Sash/Mullions						Door			
		Exterior Sill/Parting bead						Door Casing-Jamb			
		Closet Walls						Door			
		Closet Door-Interior						Door Casing-Jamb			
		Closet Casing-Jamb						Door			
		Closet Baseboards						Door Casing-Jamb			
		Closet Shelves						Window Sill/Apron			
		Floor						Window Casing/Header/Stops			
		Ceiling						Window Sash/Mullions			
								Exterior Sill/Parting bead			
								Window Sill/Apron			
								Window Casing/Header/Stops			
								Window Sash/Mullions			
								Exterior Sill/Parting bead			
		Upper Walls						Window Sill/Apron			
Room		Lower Walls						Window Casing/Header/Stops			
		Chair rail						Window Sash/Mullions			
		Baseboard						Exterior Sill/Parting bead			
		Door						Window Sill/Apron			
		Door Casing-Jamb						Window Casing/Header/Stops			
		Door						Window Sash/Mullions			
		Door Casing-Jamb						Exterior Sill/Parting bead			
		Door						Closet Walls			
		Door Casing-Jamb						Closet Door-Interior			
		Window Sill/Apron						Closet Casing-Jamb			
		Window Casing/Header/Stops						Closet Baseboards			
		Window Sash/Mullions						Closet Shelves			
		Exterior Sill/Parting bead						Floor			
		Window Sill/Apron						Ceiling			
		Window Casing/Header/Stops									
		Window Sash/Mullions									
		Exterior Sill/Parting bead									

Pb MORE THAN 0.5% OR 1.2 mg/cm² IS ILLEGAL

REMARKS

INSPECTOR

Inspection Date

10M-11/82-170874

INSPECTOR/AGENCY

Commonwealth of Massachusetts

CHILDHOOD LEAD POISONING PREVENTION PROGRAM
305 South St., Jamaica Plain, MA 02130
*INSPECTION FORM

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CASE CODE

ADDRESS OF INSPECTION (Include Apt # or Floor)

OWNER'S NAME & ADDRESS

City Code

City

EXTERIOR	SIDE	SOURCE	Pb	Loose	R	EXTERIOR	SIDE	SOURCE	Pb	Loose	R
		Siding						Siding			
		Door						Door			
Porch		Door Casing/Jamb				Porch		Door Casing/Jamb			
		Threshold						Threshold			
		Door						Door			
		Door Casing/Jamb						Door Casing/Jamb			
		Threshold						Threshold			
		Door						Door			
		Door Casing/Jamb						Door Casing/Jamb			
		Threshold						Threshold			
		Window Sill						Window Sill			
		Window Casing						Window Casing			
		Window Sash/Mullions						Window Sash/Mullions			
		Window Sill						Window Sill			
		Window Casing						Window Casing			
		Window Sash/Mullions						Window Sash/Mullions			
		Window Sill						Window Sill			
		Window Casing						Window Casing			
		Window Sash/Mullions						Window Sash/Mullions			
		Window Sill						Window Sill			
		Window Casing						Window Casing			
		Window Sash/Mullions						Window Sash/Mullions			
		Railing Caps						Railing Caps			
		Lower Walls						Lower Walls			
		Balusters						Balusters			
		Lower Railings						Lower Railings			
		Support Columns (#)						Support Columns (#)			
		Ceiling/Joists						Ceiling/Joists			
		Upper Trim						Upper Trim			
		Floor						Floor			
		Treads						Treads			
		Risers						Risers			
		Handrails						Handrails			
		Lattice						Lattice			
		Lower Trim						Lower Trim			

Pb MORE THAN 0.5% OR 1.2 mg/cm² IS ILLEGAL

REMARKS

INSPECTOR

Inspection Date

1044-11/82-170874

INSPECTOR/AGENCY

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CASE CODE

Commonwealth of Massachusetts

CHILDHOOD LEAD POISONING PREVENTION PROGRAM

305 South St., Jamaica Plain, MA 02130

*INSPECTION FORM

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ADDRESS OF INSPECTION (Include Apt # or Floor)

OWNER'S NAME & ADDRESS

City Code

City

EXTERIOR	SIDE	SOURCE	Pb	Loose	R	EXTERIOR	SIDE	SOURCE	Pb	Loose	R
Exterior		Siding				Exterior		Siding			
		Dripboard						Dripboard			
		Skirt						Skirt			
		Cornerboards (if)						Cornerboards (if)			
		Door						Door			
		Door Casing/Jamb						Door Casing/Jamb			
		Threshold						Threshold			
		Door						Door			
		Door Casing/Jamb						Door Casing/Jamb			
		Threshold						Threshold			
		Window Sill						Window Sill			
		Window Casing						Window Casing			
		Window Sash/Mullions						Window Sash/Mullions			
		Window Sill						Window Sill			
		Window Casing						Window Casing			
		Window Sash/Mullions						Window Sash/Mullions			
		Window Sill						Window Sill			
		Window Casing						Window Casing			
		Window Sash/Mullions						Window Sash/Mullions			
		Window Sill						Window Sill			
		Window Casing						Window Casing			
		Window Sash/Mullions						Window Sash/Mullions			
		Upper Trim						Upper Trim			
		Cellar Window Units						Cellar Window Units			
		Cellar Window Units						Cellar Window Units			
		Cellar Window Units						Cellar Window Units			
		Cellar Window Units						Cellar Window Units			
		Bulkhead						Bulkhead			
		Fences						Fences			

Pb MORE THAN 0.5% OR 1.2 mg/cm² IS ILLEGAL

REMARKS

INSPECTOR

Inspection Date

BM-1 V82-170874

30.125: EP Toxicity

(1) A waste is a hazardous waste if the extract from a representative sample of the waste contains any of the materials listed in Table 30.125 at a concentration equal to or greater than the respective value given in that table. The extract is obtained using the EP Toxicity test described in 310 CMR 30.155. Where the waste contains less than 0.5% filterable solids, the waste itself, after filtering, is considered to be the extract for the purposes of this section.

(2) A waste that exhibits the characteristics of EP Toxicity, and is not listed as a hazardous waste in 310 CMR 30.130 through 30.136, has the EPA Hazardous Waste Number specified in Table 30.125 which corresponds to the toxic contaminant causing it to be hazardous.

Table 30.125

MAXIMUM CONCENTRATION OF CONTAMINANTS
FOR CHARACTERISTICS OF EP TOXICITY
AND EPA HAZARDOUS WASTE NUMBERS

EPA Hazardous Waste Number	Contaminant	Maximum Concentration (milligrams per liter)
D004	Arsenic	5.0
D005	Barium	100.0
D006	Cadmium	1.0
D007	Chromium in the hexavalent form, Cr^{+6}.	5.0
D008	Lead	5.0
D009	Mercury	0.2
D010	Selenium	1.0
D011	Silver	5.0
D012	Endrin (1,2,3,4,10,10-Hexachloro-1, 7-epoxy-1,4,4a,5,6,7,8,8a-octahydrol-1, 4-endo, endo-5,8-dimethanonaphthalene)	0.02
D013	Lindane (1,2,3,4,5,6-Hexachlorocyclohexane, gamma isomer)	0.4
D014	Methoxychlor (1,1,1-Trichloro-2, 2-bis (p-methoxyphenyl) ethane)	10.0
D015	Toxaphene ($C_{10}H_{10}Cl_8$, Technical chlorinated camphene, 67 to 69 percent chlorine)	0.5
D016	2,4-D (2,4-Dichlorophenoxyacetic acid)	10.0
D017	2,4,5-TP (Silvex) (2,3,5-Trichlorophenoxypropionic acid)	1.0

30.155: Test for EP Toxicity

EP Toxicity shall be determined by the following test methods or by equivalent test methods approved by the Administrator of the EPA and by the Department.

(1) Extraction Procedure (EP)

(a) Step 1. A representative sample of the waste to be tested (minimum size 100 grams) shall be obtained using the methods specified in 310 CMR 30.151 or any other methods capable of yielding a representative sample. For detailed guidance on conducting the various aspects of the EP see "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods".

(b) Step 2. The sample shall be separated into its component liquid and solid phases using the method described in "Separation Procedure" below. If the solid residue[1] obtained using this method totals less than 0.5% of the original weight of the waste, the residue can be discarded and the operator shall treat the liquid phase as the extract and proceed immediately to Step 8.

(c) Step 3. The solid material obtained from the Separation Procedure shall be evaluated for its particle size. If the solid material has a surface area per gram of material equal to, or greater than, 3.1 square centimeters or passes through a 9.5 mm (0.375 inch) standard sieve, the operator shall proceed to Step 4. If the surface

---

[1]The percent solids is determined by drying the filter pad at 80°C until it reaches constant weight and then calculating the percent solids using the following equation:

$$\frac{\text{(weight of pad + acid) - (tare weight of pad)}}{\text{initial weight of sample}} \times 100 = \%\ \text{solids}$$

30.155: continued

area is smaller or the particle size larger than specified above, the solid material shall be prepared for extraction by crushing, cutting or grinding the material so that it passes through a 9.5 mm (0.375 inch) sieve or, if the material is in a single piece, by subjecting the material to the "Structural Integrity Procedure" described below.

(d) Step 4. The solid material obtained in Step 3 shall be weighed and placed in an extractor with 16 times its weight of deionized water. Do not allow the material to dry prior to weighing. For purposes of this test, an acceptable extractor is one which will impart sufficient agitation to the mixture to not only prevent stratification of the sample and extraction fluid but also insure that all sample surfaces are continuously brought into contact with well-mixed extraction fluid.

(e) Step 5. After the solid material and deionized water are placed in the extractor, the operator shall begin agitation and measure the pH of the solution in the extractor. If the pH is greater than 5.0, the pH of the solution shall be decreased to 5.0± 0.2 by adding 0.5N acetic acid. If the pH is equal to or less than 5.0, no acetic acid shall be added. The pH of the solution shall be monitored, as described below, during the course of the extraction and if the pH rises above 5.2, 0.5N acetic acid shall be added to bring the pH down to 5.0 ± 0.2. However, in no event shall the aggregate amount of acid added to the solution exceed 4 ml of acid per gram of solid. The mixture shall be agitated for 24 hours and maintained at 20°-40°C (68°-104°) during this time. It is recommended that the operator monitor and adjust the pH during the course of the extraction with a device such as the Type 45A pH Controller manufactured by Chemtrix, Inc., Hillsboro, Oregon 97123 or its equivalent, in conjunction with a metering pump and reservoir of 0.5N acetic acid. If such a system is not available, the following manual procedure shall be employed:

1. A pH meter shall be calibrated in accordance with the manufacturer's specifications.

30.155: continued

2. The pH of the solution shall be checked and, if necessary, 0.5N acetic acid shall be manually added to the extractor until the pH reaches 5.0 $\pm$ 0.2. The pH of the solution shall be adjusted at 15, 30, and 60 minute intervals, moving to the next longer interval if the pH does not have to be adjusted more than 0.5N pH units.

3. The adjustment procedure shall be continued for at least 6 hours.

4. If at the end of the 24-hour extraction period, the pH of the solution is not below 5.2 and the maximum amount of acid (4 ml per gram of solids) has not been added, the pH shall be adjusted to 5.0 $\pm$ 0.2 and the extraction continued for an additional four hours, during which the pH shall be adjusted at one hour intervals.

(f) Step 6. At the end of the 24-hour extraction period, deionized water shall be added to the extractor in an amount determined by the following equation:

$$V = (20)(W) - 16(W) - A$$

V = ml deionized water to be added

W = weight in grams of solid charged to extractor

A = ml of 0.5N acetic acid added during extraction

(g) Step 7. The material in the extractor shall be separated into its component liquid and solid phases as described under "Separation Procedure".

(h) Step 8. The liquids resulting from Steps 2 and 7 shall be combined. This combined liquid, or the waste itself if it has less than 1/2 percent solids, as noted in Step 2, is the extract and shall be analyzed for the presence of the contaminants specified in Table 30.125.

(i) Separation Procedures.

1. Equipment: A filter holder, designed for filtration media having a nominal pore size of 0.45 micrometers and capable of applying a 5.3 kg/cm^2 (75 psi) hydrostatic pressure to the solution being filtered shall be used. For mixtures containing non-absorptive solids, where separation can be affected without imposing a 5.3 kg/cm^2 pressure differential, vacuum filters employing a 0.45 micrometers filter media can be used. For further guidance on filtration equipment or procedures see "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods".

30.155: continued

2. Procedure:[2]

a. Following manufacturer's directions, the filter unit shall be assembled with a filter bed consisting of a 0.45 micrometer filter membrane. For difficult or slow to filter mixtures, a prefilter bed consisting of the following prefilters in increasing pore size (0.65 micrometer membrane, fine glass fiber prefilter, and coarse glass fiber prefilter) can be used.

b. The waste shall be poured into the filtration unit.

c. The reservoir shall be slowly pressurized until liquid begins to flow from the filtrate outlet at which point the pressure in the filter shall be immediately lowered to 10-15 psi. Filtration shall be continued until liquid flow ceases.

d. The pressure shall be increased stepwise in 10 psi increments to 75 psi and filtration continued until flow ceases or the pressurizing gas begins to exit from the filtrate outlet.

e. The filter unit shall be depressurized, the solid material removed and weighed and then transferred to the extraction apparatus, or, in the case of final filtration prior to analysis, discarded. Do not allow the material retained on the filter pad to dry prior to weighing.

f. The liquid phase shall be stored at 4°C for subsequent use in Step 8, i.e. 310 CMR 30.155(1)(h).

(2) Structural Integrity Procedure

(a) Equipment: A Structural Integrity Tester having a 3.18 cm diameter hammer weighing 0.33 kg and having a free fall of 15.24 cm shall be used. This device is available from Associated Design and Manufacturing Company, Alexandria, Va, 22314, as Part No. 125, or it may be fabricated to meet the specification shown in Figure 1.

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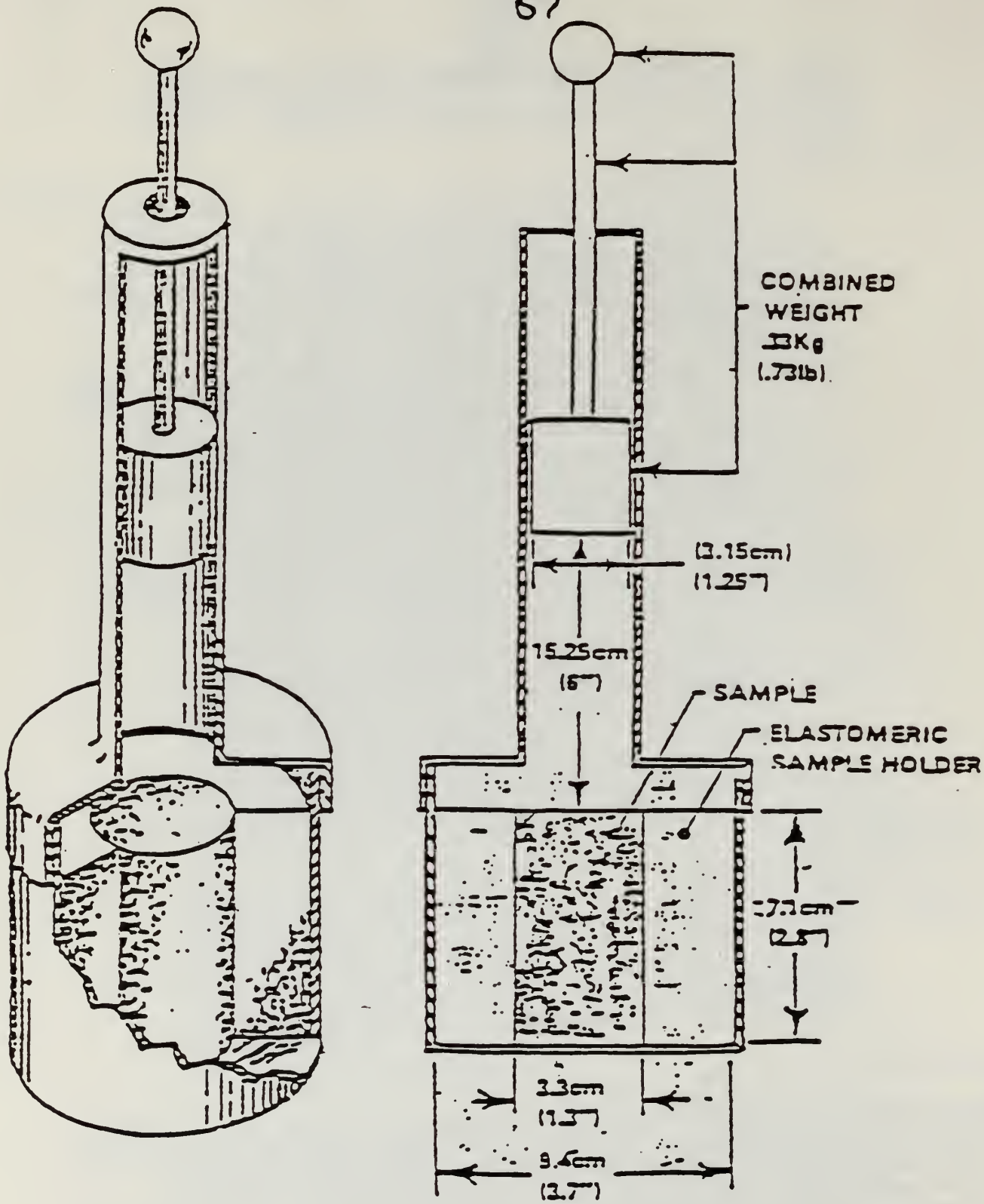
[2]This procedure is intended to result in separation of the "free liquid" portion of the waste from any solid matter having a particle size 0.45 um. If the sample will not filter, various other separation techniques can be used to aid in the filtration, as described above. Pressure filtration is employed to speed up the filtration process. This does not alter the nature of the separation. If liquid does not separate during filtration, the waste can be centrifuged. If separation occurs during centrifugation, the liquid portion (centrifugate) is filtered through the 0.45 um filter prior to becoming mixed with the liquid portion of the waste obtained from the initial filtration. Any material that will not pass through the filter after centrifugation is considered a solid and is extracted.



*ELASTOMERIC SAMPLE HOLDER FABRICATED OF MATERIAL FIRM ENOUGH TO SUPPORT THE SAMPLE

Figure 1

COMPACTION TESTER

30.155: continued

(b) Procedure:

1. The sample holder shall be filled with the material to be tested. If the sample of the waste is a large monolithic block, a portion, having the dimensions of a 3.3 cm diameter x 7.1 cm cylinder, shall be cut from the block. For a fixated waste, samples may be cast in the form of a 3.3 cm diameter x 7.1 cm cylinder for purposes of this test. In such cases, the waste may be allowed to cure for 30 days prior to further testing.
2. The sample holder shall be placed into the Structural Integrity Tester, then the hammer shall be raised to its maximum height and dropped. This shall be repeated fifteen times.
3. The material shall be removed from the sample holder, weighed and transferred to the extraction apparatus for extraction.

(3) Analytical procedures for analyzing extract contaminants. The test methods for analyzing the extract are as follows:

(a) For arsenic, barium, cadmium, lead, mercury, selenium, silver, endrin, lindane, methoxychlor, toxaphene, 2,4D (2,4-dichlorophenoxyacetic acid) or 2,4,5-TP (2,4,5-trichlorophenoxypropionic acid): "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods".

(b) For hexavalent chromium (Cr^{+6}). The following methods appearing in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods", EPA, Office of Solid waste, Washington, D.C. 20460:

1. Method 8.545 - Hexavalent Chromium by Coprecipitation with Lead Sulfate.
2. Method 8.546 - Hexavalent Chromium by Colorimetric.
3. Method 8.547 - Hexavalent Chromium by Chelation-Extraction.

APPENDIX IX

Central Office:

Childhood Lead Poisoning Prevention Program
305 South Street
Jamaica Plain, MA 02130

INSPECTORS

Region I Sharon Gilbert Paul Gingras	University of Massachusetts Amherst, MA 01002 (413) 545-2563
Region II Richard MacCracken Vincent McCarthy	DPH, Rutland Hospital Rutland, MA 01543 (617) 886-4711
Region III Richard Clohisy Shirley Sauvageau	DPH, Tewksbury Hospital Tewksbury, MA 01876 (617) 851-7261
Regions IV A & B Louise Okonski	State Laboratory Institute 305 South Street Jamaica Plain, MA 02130 (617) 522-3700
Region V David Greene David Smith	DPH, Lakeville Hospital Lakeville, MA 02346 (617) 947-1231

APPENDIX X

Local Lead Programs

Boston Environmental Health
Improvement Program
818 Harrison Avenue
Boston, MA 02118
(617) 424-5965

Merrimack Valley Lead Poisoning
Prevention Program G.L.C.A.C.
350 Essex Street
Lawrence, MA 01840
(617) 686-4470

Worcester Department of Public Health
37 Lee Street
Worcester, MA 01602
(617) 799-8589

Cambridge -Somerville
Lead Poisoning Prevention Program
Cambridge City Hospital
1493 Cambridge Street
Cambridge, MA 02139
(617) 498-1118

Leominster-Fitchburg Lead Poisoning
Prevention Program
Leominster Multi-Service Center
26 Main Street
Leominster, MA 01453
(617) 537-7395

Southeastern Massachusetts University
Lead Poisoning Prevention Program
P.O. Box D-626, 166 Williams Street
New Bedford, MA 02742
(617) 997-5732

Springfield Lead Poisoning Prevention
Department of Public Health
1414 State Street
Springfield, MA 01109
(413) 787-6710

SUGGESTED TOOLS AND EQUIPMENT

Safety Equipment

coveralls
gloves
hats
shoe covers
safety goggles
respirators with appropriate filters
first aid kit
impervious drop cloths
automotive masking tape
exhaust fan and filters

Tools

tool boxes
scrapers with assorted blades
chisels
files
screwdrivers
extension cords
hammer
level
tape measure

Cleaning Equipment

broom
dust pan
trash bags
industrial vacuum cleaner
sponges
rags
mops
large pail
trisodium phosphate